

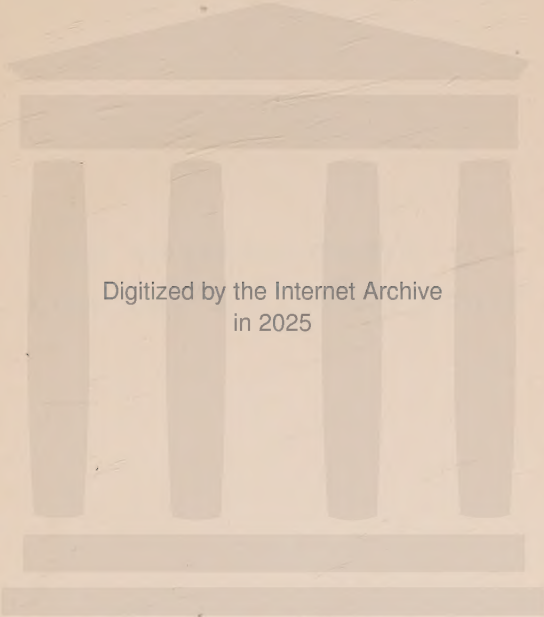
# AN INTRODUCTION TO LIBRARY CLASSIFICATION

*By* W. C. BERWICK SAYERS









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**AN INTRODUCTION  
TO LIBRARY CLASSIFICATION**







# AN INTRODUCTION TO LIBRARY CLASSIFICATION

WITH READINGS, QUESTIONS  
AND EXAMINATION PAPERS

BY

W. C. BERWICK SAYERS

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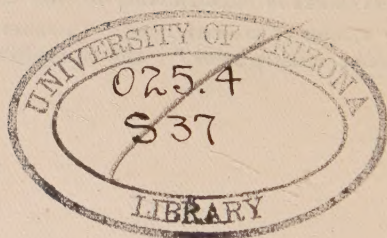
FELLOW (BY HONOURS DIPLOMA) OF THE LIBRARY ASSOCIATION  
AND EXAMINER IN CLASSIFICATION TO THAT BODY

AUTHOR OF "CANONS OF CLASSIFICATION," "A SHORT COURSE IN  
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TO THE  
HEROIC MEMORY OF MY TWO OLD STUDENTS AND FRIENDS

HENRY W. CHECKETTS

AND

ERIC A. PEPIETTE

WHO DIED FOR ENGLAND

"SOMEWHERE IN FRANCE"

1916



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## PREFACE

THIS little work seems to need a preface to excuse its appearance, since it may be thought that I have already written enough, and more than enough, upon the subject of bibliographical classification. Two years ago I gathered into a volume, *Canons of Classification*, a series of essays in which I stated in concentrated form what I considered to be the principles underlying the construction of a book classification, and then focussed them upon the four schemes most generally in use in libraries. I hoped for a small circle of readers ; but to my surprise the work received a comparatively wide welcome, and achieved what is not exactly usual with library manuals written by Englishmen, a circulation in America. The present volume does not make the *Canons* supererogatory ; on the contrary that work, with all its imperfections, and, it may be, fallacies, is the best work I have done or am likely to do upon classification. One outcome of it, however, has been the criticism that in it I took too much for granted, that I presumed in my readers a



certain acquaintance with technical terms, logical reasoning, and classification construction generally. That criticism is perhaps just.

In order to meet it I have reproduced here, after an exhaustive and somewhat wearisome revision, a series of lessons which I prepared some eight or nine years ago at the suggestion of the late James Duff Brown for the use of students working for the examinations of the Library Association. This original purpose determined the plan of the book, and I have thought it advisable to retain it, in spite of the fact that it leaves the work full of repetitions which may be irritating to readers who have some knowledge of the subject. Throughout I have tried to be as rudimentary and as lucid as possible. I assume that my readers are beginners without the most elementary acquaintance with either logic or classification. Necessarily, in so small a compass, I have not exhausted any of the problems of classification ; every chapter could have been expanded tenfold, especially in the second half of the book, but I believe that the essential themes are all touched upon in a way that will lead students to appreciate their meaning and significance. One or two paragraphs are repeated from earlier books of mine, as I thought it would be affectation to attempt to re-write what I had written as well as I was able.

The simple hypothesis that underlies all I have written is that a general classification is primarily a schedule of the field of knowledge ; that it is possible to assume an order in knowledge ; and that the order most clearly indicated by modern scientific method is the historical order. A general book classification in its essentials is identical with a knowledge classification, and only differs from it in the provision of general and form classes and divisions, and such practical auxiliaries as a notation and an index.

I am indebted to every earlier writer and to several lecturers upon the subject. In fact, I may quote Edmund Burke's position upon a greater question to define my own upon this : " I assure you I do not aim at singularity. I give you opinions which have been accepted amongst us, from very early times to this moment, with a continued and general approbation ; and which indeed are so worked into my mind, that I am unable to distinguish what I have learned from others from the results of my own meditation." The list of books which forms the second appendix will show where the best of my book has come from. I may safely be credited with the worst in it.

In preparing the lessons in their original form I had much help, especially in the verifying of the

references, from Mr. Henry A. Twort, now Librarian of the Central London Library for Students ; and in this final form I have had the advantage of suggestions from Mr. Henry A. Sharp, who is instructor in classification to the Library Association, and from my wife.

W. C. BERWICK SAYERS.

CROYDON, 1917.

# AN INTRODUCTION TO LIBRARY CLASSIFICATION

## PART I. THEORETICAL

### CHAPTER I

#### INTRODUCTION—THE MEANING AND PURPOSE OF BOOK CLASSIFICATION

I. WHEN we speak of a "library," our mind has before it the idea of a number of books placed upon shelves; when of "librarianship," we think of certain duties performed in relation to those books, their selection, preservation, and distribution. We can readily believe that amongst these duties the *arrangement* of books is an important one; in fact, a little thought will persuade us that it is a very important one. We might even go farther and say it is the most important of all, because upon the arrangement of the books depends in a large degree every other duty performed by the librarian. That arrangement is book *classification*. If the books are arranged by the elementary fact of *size* they are to some extent classified, for from their size we can in many cases infer the date of their publication, since

it is probable that by far the largest numbers of folios, for example, were published before 1700, and that quartos predominated in the eighteenth century ; and from the age of a book we can, if we have studied the history of literature, infer certain of its qualities. Again, if the books are arranged by another method, let us say in alphabetical order of their authors' names, we can infer yet other facts about them, such as to what extent certain authors are represented in the collection and by what works.

2. Such arrangements are elementary although they have their uses. The modern method is to arrange books in whatever manner will make them most easily accessible and most useful to the readers who will use them ; and the experience of librarians leads them to the conclusion that this purpose is served best by arranging them according to their *subject-matter*. This seems to be a simple operation, but it is in fact quite complex, and for its efficient performance knowledge and careful training are demanded. Consider any book known to you—let us say Ball's *Star Land*. Its subject is stars, and we ought, if we follow our rules, to place it with all other books on stars that our library contains ; but when we have done this and have examined the collection we have made, we shall, if we glance inside the books, see that they deal with only one part of a much larger subject, the literature about the construction and workings of the universe—with

astronomy. We must therefore bring together all astronomical works. An examination of these will reveal the further problem that in the study of the universe certain collateral studies are involved, mathematics, physics, and so on. If our classification is to be useful in the fullest sense, books which deal with these subjects must be connected up in some way with books on astronomy. Nearly every subject upon which books have been written has these collaterals and affiliations, and the recognition of these, and the arranging of our books so that they can be followed, is the work of classification. To do this with even moderate success, we must have some slight knowledge of many subjects, but we must also have some notion of the extent of the field of knowledge so that we can recognise the greater sciences of which the smaller are parts, and be able to follow the order of a schedule of these sciences. Such a schedule, or list of subjects into which knowledge may be divided, is called a scheme, or system, of classification. How such schemes are constructed, and how used, is the matter of the following lessons.

3. My preliminary remarks may seem to justify the conclusion that if books are arranged according to their subjects, it does not matter particularly in what order the groups of subjects themselves are arranged. A limited number of librarians favour an alphabetical arrangement of subjects in some such order as this :—

Abbeys  
Accidence.  
Agriculture.  
Alternating currents.  
Amphibious animals.  
Animals.  
Aorta.  
Aphorisms.  
Aquarium.  
Art.  
Etc.

Certainly if groups of books on these subjects are arranged in this order a useful purpose is served. Any reader can easily follow it, and there is a distinct *grouping* which is of value. Closer examination will show that its value is not so great as it would be if the *relations* of the subjects were shown. The books on Abbeys have no subject relation to Accidence, nor have those on Accidence any relation to Agriculture. But Abbeys have a definite relation to Architecture, and Accidence to Philology, and its various forms of language, syntax, prosody, and so on. Therefore, although very important libraries have issued catalogues in this form, such for example as the great *Subject Index* of the London Library, such an order is not what is usually conveyed by the word classification. It is an *indexing* of subjects (as indeed the title of the London Library Index implies). A classification as it is generally understood, and as we understand it throughout this book, is an arrangement of books by their subjects according to some system which shall, so



far as the physical form in which the subjects are presented allows, show definitely the relations of those subjects.

4. Such systematic classification presumes that the maker of the classification has reviewed the whole field which his subject covers, and has divided it first into its broadest divisions, and has then re-divided each of these until he reaches the smallest subjects which make up the division. If his subject is the whole of human knowledge as revealed in books, his schedule of divisions is called a *General Classification*; if it is only one part of knowledge, Science, for example, or Art, or Philosophy, or Travel, it is called a *Special Classification*. In both forms various methods have been used or suggested, some elaborate, some simple, but each with the cardinal purpose, which is the justification of classification, of presenting books in the order most useful to readers. The main controversies of the subject, with which we shall trouble the reader as little as possible, revolve around the question of what is the most useful order.

5. Utility to readers is the principal virtue of a classification, but it has other utilities, which justify the assertion that this work is the most important duty of librarians. It enables a librarian to build up a library in a systematic and comprehensive manner. For, obviously, if he arranges his books in an order which shows the whole field of knowledge, the gaps in any part of the field are revealed, and

(supposing literature to exist upon the subjects the gaps represent) he is able to make good the omissions. He sees at once the strength or weakness of various subjects, and is able to make his additions, and, what is equally important, his withdrawals, of books, in a satisfactory manner. Classification is consequently the most important auxiliary of book-selection and rejection, and since the provision of books is the sole reason for the existence of the librarian, its claims are sufficiently clear.

6. In order that we may be able to estimate the merits of the various classification schemes, we ought first to study their order as it is shown in the main classes and divisions of the schemes. This means that we need some acquaintance with the simple logical rules which govern their construction. We have then to recognise the various parts of the schemes, many of which are merely artificial adjustments and expedients which are necessary in order to fit books into them ; to understand the keys to them in the shape of indexes and notations ; to learn how to apply them in arranging our books ; and, finally, to appreciate their application to catalogues, and the methods that are used to indicate individual subjects and books on the shelves. We shall also find it both useful and interesting to glance briefly at the progress of classification since men conceived the idea of writing down their views upon the order of knowledge.

## CHAPTER II

### A BRIEF REVIEW OF THE LOGICAL PRINCIPLES OF CLASSIFICATION

7. It is impossible to think or to reason aright unless we classify, and most people have been classifying all their lives without being in the least aware of the fact. Our most simple remarks in conversation, such as "A beautiful house," or "My neighbour has a fine dog," would be meaningless if we did not form in our minds some idea corresponding with the words "house" or "dog" when the words were spoken or heard. As it is, the words create an idea in our minds of a group of things in which people live, known as houses, or a group of domestic animals having definite qualities. Our recognition of the qualities and the accompanying mental process by which we place houses and dogs into their right groups, or *classes*, is the act of classification. Think of any object known to you as having had existence, or existing, or likely to have existence—a man, a tree, a town, an animal, or whatever you will—and you will find without very much thought that it is related in some way to other objects of a like or similar kind ; that, in short, it forms part of

the class of things having the qualities of humanity, of plant life, of animal life, and so on. If there are things that are totally unlike all other things in the universe, they are unique ; but we can ignore the probability of the existence of such things for the present, and can accept as accurate the axiom that everything we know or feel or see, or may know, feel, or see, is part of or is related to something else like it ; that, in short, it is a member of a class.

8. To classify, then, is to arrange things in classes. Our first need, therefore, is to be clear as to the meaning of a class. A class in its simplest statement is a group of things having a greater or less degree of resemblance or likeness to one another. In a rough fashion, a class may be said to be the equivalent of a *Genus* ; and here we meet with a logical term which requires explanation. A genus is the first or governing term in a series of terms belonging to scholastic logic, known as the *Five Predicables*, which first appear in connexion with the writings of Aristotle. To these earnest consideration should be given as it will smooth the course of the student. The Predicables are :—

Genus.  
Species.  
Difference.  
Property.  
Accident.

Briefly, a *Genus* is any group of things having likeness which may be divided into two or more things or *Species* ; and from this statement it is clear that the species are the things into which the genus may be divided. The principle governing the division is some quality *added to* the genus which is called the *Difference*. A *Property* is some quality belonging to the whole of the genus but which does not necessarily enter into its definition. An *Accident* is some chance quality which may or may not belong to a class ; that is to say, it has no *necessary* connexion with any member of a class.

9. These definitions may seem to be formidable, but a few examples will make them clear. Since a genus is any group of things that can be divided into species, the term Animals is a genus in relation to the species lion, elephant, dog, and all other animals. Each of these animals is a species of the genus animals, but the peculiar property of a genus is that *any* group of objects may so be named in relation to the things that make up the group. Thus, while the dog is a species in relation to animals, it is a genus in relation to hounds, setters, retrievers, or other species of dogs. Again, the term hound may be a genus in relation to the species boarhound, foxhound, and wolfhound, and, in fact, the process can be repeated until we reach the individual dog who belongs to our neighbour.<sup>1</sup>

<sup>1</sup> It should be noted that I use hounds, etc., as genus or species in a logical and not in a zoological sense. While what is said

10. In arriving at the divisions, or species, we have added to the genus some quality which marks off the species from the rest of the members of the genus. This added quality is the Difference, and it denotes in the species an added degree of likeness. We divide animals into lion, dog, and so on, by adding the qualities which make the lion distinct from the dog and from other animals to our idea of what is connoted by the word animal. Again, if we have for our genus House, we can divide this into species by adding as the difference the material of which the house is mainly built ; thus, stone houses, brick houses, wooden houses and canvas houses are species marked off from the genus by the possession of the quality of being built of stone, brick, wood or canvas. Regarding these things from the point of view of likeness, we see that an animal is more like any other animal than it is like any other living thing ; that one kind of lion is more like other lions than it is like any other animal ; and that a brick house is more like any other brick house, so far as material is concerned, than it is like any house built of stone, wood, or other material. Consequently each added difference increases likeness. The Difference is thus seen to be the most important principle in separating like things from unlike things which is one of the primary purposes of

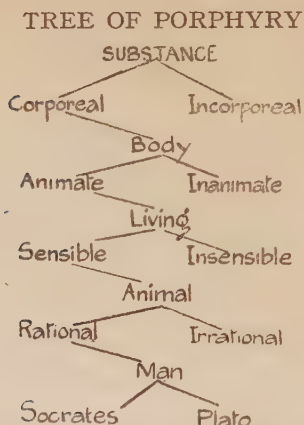
above is perfectly true in the sense in which the terms are used, it would be inadequate for the purposes of a natural classification of mammals.

classification. The mental operation involved in selecting or discovering the Difference is called Abstraction.

11. The term Property is used to describe some quality which is common to the whole of a genus, but which is not necessarily confined to the genus. Thus, when we think of books we think of objects which have the property of being able-to-be-read—all books possess this quality. But there are other things which may be read, as a moment's thought will convince us. The possession of a heart is a property of man, but is not peculiar to him. The reader may easily multiply instances. An Accident is a quality which may or may not belong to the things in a class, and which has no effect upon the other qualities in the class. In the class houses the colour of the house is an accident which does not affect the nature of the house. The size of a thing is another example of an accident; a small man does not differ in any inherent property from a big man, nor does a large triangle from a small one. In the example of books—let us say an octavo and a duodecimo edition of *Paradise Lost*—the qualities of the poem are identical, the size of the edition merely an artificial particular, an accident.

12. The application of some part of the Predicables is illustrated in the well-known Tree of Porphyry, as it is called, which is also one of the earliest and simplest examples we possess of a classification.





But for the operation of certain laws of mind, which are interesting but do not enter into our study at this point, the mind would go through some such lengthy process as is shown in the Tree in recognizing any object and in classifying it. We can learn many things from this device of Porphyry which will be useful to us throughout our study. In the first place it is a classification, of an elementary kind, of Substance; that is to say, Substance is the Main Class of the scheme; and its divisions and subdivisions are all *parts* of that Main Class. By gradual steps the qualities contained in the whole of Substance are added to in order to produce the divisions. We can express this by the simple= (equals) and + (plus) of mathematics:

Substance=Body + Bodiless Things.

Body=Substance + Corporeality.

Living Being=Substance + Corporeality + Life.

Animal=Substance + Corporeality + Life + Sensation.

Man=Substance + Corporeality + Life + Sensation + Reason.

Plato=Substance + Corporeality + Life + Sensation + Reason + An individual named.

Each of the first of these terms is a species when considered in relation to Substance ; is a part of it possessing the properties which pertain to Substance ; but each is also a genus in relation to the terms that follow it ; that is to say, the things that follow it are those into which it can be divided. Finally, at each stage the last plus stands before the difference that has been added to make the new division or species. Logicians tell us that the term Substance is one of great *extension* and of small *intension*, and that as we proceed down the Tree the terms decrease in extension and increase in intension. And they add that extension and intension vary conversely to one another. Let us understand this before we proceed. The extension of a term means simply all the things covered by it. Substance is a very wide term ; it covers an almost illimitable number of things. Body is a wide term, but it is not so wide as Substance ; therefore it is of smaller extension than Substance. At the same time it tells us more about a certain class of things, and, in consequence, is of greater intension. Continue this method of reasoning, and we shall see that as we descend each term becomes less wide in what it contains, but more definite as to what it contains. As the number of things covered by the

term becomes smaller the smaller becomes its extension, while we are able to infer more about the things, and so the greater becomes its intension. A term in extension is said to cover all the objects to which the term can be applied ; a term in intension consists of the qualities of the objects. The quality added to Substance to produce the term of greater intension, Body, was corporeality ; to Animal, to produce Man, Reason was added, and so on. In the world of life the term Animal conveys a more definite meaning to us than does the term Life itself ; and Animal in turn tells us something less definite than does the term Man. Substance, then, is a term of wide extension but very small intension, while Plato is a term of very small extension but of great intension.

13. The principle thus illustrated in the Tree of Porphyry pervades classification. The arrangement of the terms must be from terms of great extension and of small intension to terms of small extension and of great intension.

14. It is very important that this process should be a gradual one, and that each wide term should divide into a term rather less wide indeed, but its nearest term so far as that may be. We could divide Substance as follows :

Body  
Animal.  
Plato.

but it would be a faulty arrangement viewed in the light of the rule just stated, since there are inter-

mediate forms between Body and Animal and between Animal and Plato. We say that the terms do not modulate properly ; and in a good classification the process of division must be by gradual steps, each term modulating into the term next to it. The rule governing modulation is the main rule of classification : things must be arranged together according to their degrees of likeness, and separated according to their degrees of unlikeness. In any class of things there are usually things more like one another than are other things in the class. We arrange the things that are most like one another together. Thus the first division of any class will consist of those things which have most likeness to the majority of things in the class ; the second division of those which have a less degree of likeness to the majority of things but still a greater likeness to them than the other things possess ; and, if we proceed to arrange the whole of the objects in the class in this manner, we shall have made successive groups of things lessening the extension and increasing the intension gradually, so that each group modulates into the next without a leap.

15. Another principle that we can learn from the Tree is that the terms of a classification must be mutually exclusive. That is to say, the objects denoted by each of the terms as they move downward must exclude everything except what is covered by the term. Thus, Living Being excludes every other form of Body ; Animal excludes every other

form of Living Being ; Man every other form of Animal ; and Plato every other Man. *This result is achieved by using a consistent factor of division.* In the Tree of Porphyry the arrangement is really a biological one—life and its divisions are kept in mind throughout. But we can perhaps better illustrate this principle by a few simple examples. If we seek to classify a subject we must first seek some principle by which to do it. Let us suppose we wish to classify men, and we construct this schedule :

English.  
French.  
Chinese.  
African.  
Negroes.  
Americans.  
Eskimos.

and so on, we have begun with the principle of nationality, but have created much confusion by introducing races as Negroes and Eskimos. Clearly Negroes may be African (and in a real sense) Americans ; so that they fall into both places, a thing which is contrary to the principle of mutual exclusion. Or, if we classify Houses, we can do it by any principle ; let us say material

Stone House.  
Brick House.  
Wood House.  
Slate House.

If we add “ dwelling ” house or “ red ” house, we immediately create confusion, as any of the

houses in our schedule may be a dwelling-house or may be red in colour. This error of introducing a principle alien from that with which the classifier set out to plan his classification is called *Cross-Division*. The principle chosen as the basis of a classification is called the *Characteristic of classification*; in the Tree of Porphyry the characteristic is biological, in our above arrangement of men, national, in that of houses, materials; and the rule of the matter is: *Characteristics chosen to form the basis of classification must be consistent*,

16. The value of a classification depends in no small degree upon its hospitality; upon its generalness; or, to put it another way, upon its exhaustive character. As far as possible it should enumerate in its schedules all parts of the subject, or give the names of every object that can be classified in the schedule. This is a principle which it is perhaps impossible to realize in practice, seeing that to name everything in the universe in a schedule is out of the question; it is merely an ideal; but, in fact, the difficulty is provided for by the flexibility of a properly constructed classification, which allows the insertion of any new term at any part of the scheme without dislocating the sequence. This matter will become clearer as we proceed.

17. We have dealt at some length with characteristics and the importance of consistence in their use. The question naturally arises in our minds: what is the proper characteristic of division to be adopted

in making a classification scheme? The answer is simple: that which is most useful to the purpose for which the scheme is designed. A library of books may be arranged a hundred ways to suit a hundred different people. It is conceivable that a bookbinder will prefer them to be arranged by the material in which they are bound, the binding being the characteristic in which he is most interested. A traveller may perhaps choose a geographical arrangement irrespective of every other characteristic. A churchman may choose the characteristic of orthodoxy. In each case the classification—if it were limited in use to the particular person named—will be the most useful and therefore the best to fulfil its purpose. But when we deal with general classification—and we are thinking principally of books as a whole at the moment—we shall easily see that none of these characteristics is best for all readers. Classifiers have debated the best characteristic at some length, and a balance of opinion favours the historical or evolutionary characteristic, by which the books shall approximate in arrangement to the development of the subjects of which they treat. The matter is somewhat complex, and in the absence of entire agreement upon it we can only repeat that the characteristics chosen must be most useful for the purpose of the classification, with the rider that the characteristic most widely favoured is the historical one.

18. So far we have rather assumed that the reader



is familiar with the meaning of the word Term, and have used it freely. It may be well to formulate a meaning, however. A Term, then, is a word which is the name of any thing—or a phrase which stands for a name. Thus “ John ” is a term for a certain person ; and equally “ The man next door ” is a term which stands in the place of a name. Terms are of two kinds, concrete and abstract, the first denoting things or objects, the second qualities. Thus boy, stone, and book, are concrete terms ; while boyishness, hardness, and bookishness, are abstract terms. We need not pursue this subject further, as it can be followed in any good work on logic ; but one important principle is involved in terms which bears upon classification. That is : *terms must be used in an invariable sense in a classification*. We often notice that variant meanings are often given to the same word in varying circumstances, and this variation is the greatest source of confusion in reasoning. For example, when we speak of a “ sharp boy ” we use the term in a metaphorical sense ; we do not mean that the lad has a cutting edge as we do when we speak of a sharp knife. We could not make a class of “ Sharp Things ” and produce this sequence :

Sharp Things.

Street Arabs.

Carving Knives.

Needles.

Fox Terriers.

## CHAPTER III

### REPETITION. THE NOTION OF A CLASS. NATURAL AND ARTIFICIAL CLASSIFICATION. THE PARTS OF A CLASSIFICATION

22. WHEN we use a word which is the name of more than one thing—as man, animal, plant—we assume the existence of certain *groups* of individuals or things which have certain qualities in common, the qualities of the human form and reason; the qualities of the possession of backbone, mammæ, etc.; the qualities peculiar to vegetable growths respectively. The classing in this manner brings to our mind those qualities. The existence of a class implies difference; that is to say, it implies a distinction between the objects in the class we have in mind and all objects outside that class. The process of the mind in discovering the qualities which make this difference is called the power of *abstraction*. While a class implies a difference between itself and other classes it also implies a likeness between the members composing it. For example, the hyena, ox, horse, and elephant, vary greatly in their individual peculiarities, but they resemble one another in the possession of the back-

bone, in the fact that they are viviparous, and possess warm-blood and mammæ. These resemblances constitute the principal qualities which mark them as members of the class animals. But while animal is a class (or genus) in respect of the groups (or species), hyena, ox, horse, and elephant, hyena may itself be a class or genus in respect of the various forms of hyena ; or the ox a class in respect of the various forms of oxen. Similarly, so long as objects can be divided into two groups, classes can be formed. Let the example be Man. We can form classes by dividing Man into Black, White, or Red, we can form further classes by dividing White into Aryan and Non-Aryan ; Aryan into Caucasian and Non-Caucasian (Mongolian), Caucasian into Latin and Teuton, Teuton into English and German, English into Londoner and Provincial, Londoner into East-End and West-End, East-End into Coster and Lighterman, Coster into Fruitseller and Fishseller, Fruitseller into John Jorkins and Jim Juggins. Or, instead of taking the first in each pair of terms just given, the second might be taken and a similar division made. We may now state our definition of a class summarily as : “ Any grouping of things or ideas which have one or more qualities in common the grouping to exclude objects not possessing these qualities ; such grouping implying, therefore, a difference between objects within it and other objects without it, and some resemblance between the objects within it. Such grouping may be con-

without ridiculous results. It is essential that whatever form of the term is used, that form only shall persist throughout the scheme ; it must permit of only one meaning.

19. In the succeeding chapters it will be seen that the important logical principles developed in this chapter are deliberately repeated both briefly and in extended form. We hope that the student will not be irritated by the method adopted, because we believe that he should have constant contact with these principles until they become part of his mental equipment, and that he will find that their due appreciation transforms the work of library classification from a mere mechanical exercise into an intellectual process of living interest.

20. READINGS.—The object of the book references given in this and similar paragraphs of each of the following chapters is primarily to enable the reader to pursue the themes explained in the chapters, but literature does not exist on every theme that will be treated. It has been thought well to design the readings so that, taken in order, they will form a satisfactory course of classification study, such as should engage the attention of a student for about a year.

JEVONS, W. S. *Elementary Lessons in Logic*, Chapters v and xii.

— *Principles of Science*, Chapter xxx, pages 673–685.

RICHARDSON, E. C. *Classification*, Introduction and Lecture I, sections 1–5.

SAYERS, W. C. B. *Canons of Classification*, chapters i and ii.

## 21. QUESTIONS.

(1) It is impossible to think or discourse if we do not classify. Explain.

(2) How does the *difference* govern division ?

(3) What do you know of the Tree of Porphyry ?

(4) Show how terms in extension and in intension vary conversely from one another.

(5) Terms must be mutually exclusive. Explain.

(6) What are "consistent" and "essential" characteristics ?

tinued within the group itself so long as any two objects exhibit differences."

23. We have said that classification is a "grouping of classes." Such a grouping is called a *schedule*, or a table of classification; and we have now to consider the parts that go to make up any scheme of classification. Generally speaking, the designer of a scheme takes that field of knowledge which his scheme is meant to cover and divides it into a certain number of broad parts. For example, the biologist divides the living-world into the two great divisions Botany (or the Vegetable Kingdom), and Zoology (or the Animal Kingdom). In his turn the botanist divides the Vegetable Kingdom into plants having cells only (cellular) and those having cells and vessels (vascular); the zoologist in his turn divides the Animal Kingdom into Vertebrates (or animals possessing a backbone) and Invertebrates (or animals without a backbone). We have here, then, a main heading and certain divisions and sub-divisions:

Biology	<i>Main heading.</i>
Zoology	<i>Division.</i>
Vertebrates	<i>Sub-division.</i>
Invertebrates	„
Botany	<i>Division.</i>
Cellular	<i>Sub-division.</i>
Vascular	„

When our reading of the predicables is compared with this result we see that Biology is the *genus* from which the *species* Zoology and Botany are

derived ; and that in turn Vertebrates and Invertebrates are species of the genus Zoology ; that cellular and vascular plants are species of the genus Botany ; that all the species have the *property* of life in common, that the possession of a vegetable or an animal structure is the *difference* between the two first divisions ; that the presence or absence of the backbone constitutes the difference in the subdivisions of Zoology ; and the possession of cells, or of vessels, constitutes the difference in the subdivisions of Botany. *As all classification proceeds by similar methods, we infer that all classification is governed by the principles laid down in the five predicables.*

24. A classification scheme has been shown to consist of divisions and sub-divisions. Various terms are used by classifiers, but the following will serve for our purpose. The first great groupings of a subject are its main divisions, the secondary groupings are its sub-divisions, the tertiary groupings are its sections. This differs slightly from the nomenclature just used, but the matter is of small consequence ; hence

Biology	<i>Main division.</i>
Botany	<i>Sub-division.</i>
Cellular plants	<i>Section.</i>

But the process of differentiating (or descending the steps of the schedules) between one term and the next, is called indifferently division or sub-division. We have shown the schedule of the main divisions



and principal sub-divisions and sections of Biology. The process is similar when the classifier has universal knowledge to classify. Dr. Richardson, for example, has attempted to arrange all knowledge into four divisions, as follows :

- Hylology (or unorganized matter).
- Biology.
- Anthropology.
- Theology.

James Duff Brown attempts it thus :

- Matter and Force.
- Life.
- Mind.
- Record.

Dr. Melvil Dewey arranges it :

- Philosophy.
- Religion.
- Sociology.
- Philology.
- Sciences : Natural and Mathematical.
- Useful Arts.
- Fine Arts.
- Literature.
- History.

while Cutter has main divisions as follows :

- Philosophy.
- Religion.
- Historical Sciences.
- Social Sciences.
- Sciences and Arts.
- Useful Arts.
- Athletic and Recreative Arts.
- Fine Arts.
- Arts of Communication by Language.

Each of the main divisions (or headings) arrived at thus by the classifiers excludes all the material, or objects which may be included in the other headings—the headings are mutually exclusive. The classifiers then proceed to sub-divide each division into its broadest parts, again making each term exclude all the objects embraced by the other terms. The process is continued by dividing the subdivisions into sections, and dividing and re-dividing these, observing the same rule of mutual exclusion, until as minute a schedule is obtained as is necessary for the purpose of the scheme. Thus, Richardson, proceeding from Anthropology, gets this division :

Anthropology.

Psychology (human).

Aesthetics.

Literature, etc.

25. What order then should be observed in making the division ? What principle should guide us in our choice of headings ? In formal language, what is the *characteristic* that shall be the basis of the arrangement of our classification ? The logical rule, which we have already quoted, declares that “characteristics used in classification must be essential to the purpose for which the classification is intended.” But what is an essential characteristic ? Examples of the meaning were given in section 17, and in applying classification to a *special* subject, the bearing of the canon is clear ; but what is the essential characteristic to be kept in view in

an arrangement of all knowledge ? We shall perceive this by understanding that a classification should enable the mind to retain (to remember) the characteristics (qualities or properties) of the objects classified. Hence, that arrangement is best which is according to some feature *inherent* in the objects. To take a simple example ; if we classify bottles by the substance of which they are made—earthenware, tin, glass, china, we arrange them by some property inherent in, essential to, the bottle ; we obtain definite ideas from this arrangement of the brittleness, opacity, and derivation of the bottle. The assumption is that we have arranged our subject by an essential characteristic ; i.e., the substance of which the object is made. If, on the other hand, we classify bottles by their sizes, we increase the extension of our name, bottle, considerably, and lose much of the definiteness of the other method. The size of the bottle is an accident—therefore not an inherent characteristic. Consider another example. Men may be arranged by the colour of their hair, but this will not give us a very logical scheme. Red Indians, Chinamen, Negroes, and Caucasians may all have black or other coloured hair, and our grouping would provide various elements of confusion ; the colour of hair is an accident. But if we arrange men by the *shape* of the hair, we get a very different result. Caucasians have hair which in section is circular in shape ; Mongolians have hair which is oval in section. Hence, from a hair of

either of these we are able to infer a whole set of qualities which belong to the race Caucasian or Mongolian, as the case may be. We have here inherent characteristics, essential to the types of men in question.

26. A definite turn has been given to this question by Dr. Richardson, who asserts that the order of classification is the order of things; that every object in Nature is already classified, and that our apprehension of that existing order is knowledge. To state it more simply. A Creative Power has ordained that the things in nature develop one from the other; that their likeness is a result of their relationship, that the original form or forms from which they have developed were simple and that in the course of development the forms have become complex. This is an elementary statement of the great principle of evolution. The law then that Richardson would convey is that a classification of knowledge, whether in nature or in books, should follow the order of evolution; that it is the business of the classifier to ascertain, so far as the progress of human knowledge makes it ascertainable, what that order is, and then to frame his classes in accordance with it, so that the resulting system will show the development of things.<sup>1</sup>

27. One of the difficulties of the student is to differentiate between Natural and Artificial classifi-

<sup>1</sup> Compare Richardson, page 18 *et seq.*, with *Canons of Classification*, sections 26 *et seq.*, and 43 *et seq.*

cation, and we must pay careful attention to this question. Stated briefly, it is this : *A natural classification is one that exhibits the inherent properties of the things classified ; an artificial classification is one in which the arrangement depends upon some arbitrarily chosen characteristic or accident of the things classified and has no direct relation to their inherent properties.*

The example given by Mr. L. Stanley Just deserves to be remembered.<sup>1</sup> He points out that the consonants of the alphabet may be arranged artificially by the position the letters occupy in space, and we should get some such result as this :

1. Letters resting on the line, *w, x, r, c, m, n*, etc.
2. Letters resting on and rising above the line, *d, b, l, t*, etc.
3. Letters passing through the line, *p, q, g*, etc.
4. Letters passing through and rising above the line ; *f* is the only example.

But this arrangement conveys nothing about the letters except the accident of their shape. If, on the other hand, we arrange letters by the parts of the mouth, throat, etc., brought into use in their pronunciation, as shown in the arrangement of consonants in Morris's *Primer of English Grammar*, Chapter II, or any other good grammar, we get a natural classification into :

Gutturals.  
Palatals.  
Dentals.  
Labials.

<sup>1</sup> In some lectures at the London School of Economics, 1905.

which tells us of their method of pronunciation and enables us to gather how they will combine with vowels and with one another. Practically the whole history of the classification of knowledge is a gradual working forward from artificial schemes of arrangement to more and more natural ones. In the development of Botanical classification; for example, Cæsalpinus, one of the earliest classifiers, in 1583, divided plants into the very artificial divisions, Trees and Herbs, and then arranged the plants in each by the situation of the seed-vessels; Morrison, who followed, founded the system, afterwards developed by Ray, of Flowering and Flowerless Plants, and divided the former into Monocotyledons and Dicotyledons; Tournefort divided by the presence and form or absence of the Corolla; Linnæus, however, produced a more artificial system, which proved a set-back to the more natural scheme of Ray, and in it he arranged plants by the number and mode of arrangement of the floral organs. Now, however, the scheme, first propounded in 1759 by Bernard de Jussieu, which adopted the primary divisions of Ray, has been developed into what is called the Natural scheme. This arranges the vegetable kingdom into two great groups dependent upon the cellular and vascular structure of plants, and re-divides these into :

Cellular.

Acotyledons      =without seed lobes.

Vascular.

Monocotyledons      =one seed lobe.

Dicotyledons      =two or more seed lobes.

We have here as near an approach to a natural classification as is possible in the present state of our knowledge.<sup>1</sup> A similar development from an artificial to a more natural arrangement can be traced in Zoological classification. Aristotle formed first two broad classes: (1) Animals with blood, and (2) Animals without blood, an obviously defective classification, since all animals possess blood; he meant: (1) Animals with red blood, and (2) Animals without red blood. But Aristotle also put forward as a correlative of red blood the possession of a bony vertebral column; those without red blood lacking this vertebra. This distinction of vertebrates and invertebrates is the basis of the modern natural arrangement. However, Pliny, who adapted erroneously a part of Aristotle's arrangement, produced an artificial classification which depended for its characteristic upon the element on or in which the animal lived; hence

Land animals.

Aquatic animals.

Flying animals.

An arrangement entirely independent of the primary structure of animals, as clearly there are both vertebrates and invertebrates in any or all of these groups. This general scheme persisted for many centuries, until Ray went back to Aristotle's broad groups,

<sup>1</sup> I have thought it best not to confuse the student by referring to the later developments of botanical classification, such as Engler's; I only state a principle.



and considered anatomical structure as the basis of the arrangement. Linnæus, again, created an artificial system for zoology, as he had done for botany, but it was only partly artificial.

Mamalia.

Aves.

Amphibia.

Pisces.

Insecta.

Vermes.

The artificiality lies in the fact that the arrangement did not depend upon the distinction of natural groups, but took isolated features of internal and external structure as characteristic. The modern natural system was founded by Cuvier, 1812, and the arrangement arrived at was based upon comparative anatomy: it embraced the two groups vertebrates and invertebrates, and arranged the organs of each according to their dependence upon one another; in logical language, according to their correlations.

We do not intend to give here more examples of natural as opposed to artificial arrangement than are necessary to make the distinction clear; but the subject may be pursued farther in the various standard textbooks on science, and in the article on Classification in Rees's *Cyclopædia*, an old work, but one still retaining authority upon this question. We may note in passing that the natural classification in Chemistry is by the potentialities of substances, and there is a very beautiful example of

classification in the arrangement of crystals ; which may be studied in Jevons's *Principles of Science*, chapter 30, pages 685-689.

28. It will be clear now that if a natural classification deals with inherent properties of things ; if it shows the correlation of things, we arrive at the conclusion that to classify books in a natural order the arrangement must be according to their subject-matter, not to their size, appearance, binding, or the materials of which they are made ; must show the affinities of subjects—how one is a necessary part of another ; how some one or more books precede, and some one or more succeed, any given book. Thus we see that an arrangement of books alphabetically by authors is in the main artificial. It brings all Jones's books together, and if Jones writes upon one subject, and we know that subject, it tells us what these books contain. But authors do not fall into distinct categories of this kind, and the alphabetical order tells us actually nothing about the books. In like manner an arrangement of books by accession numbers tells us absolutely nothing of their contents. A chronological arrangement of books is also artificial ; it informs us, of course, that certain books appeared in a certain year, and if that year was marked by some peculiarity of thought, some specific kind of event, these books will probably reflect such peculiarities ; but we really learn very little from such an arrangement. Nearly all book classifications are a compromise

between the artificial and the natural arrangements. In the Dewey classification, for example, there are certain "form" classes as they are called—Literature will serve for an example. In this class the books are grouped by the form in which the subject-matter is cast ; i.e., Poetry, Drama, Essays, Letters, etc., and nothing is shown of the *subjects* of the poems, plays, essays or letters, which may deal with love, science, or what not. Under these forms the arrangement is again the purely artificial one of chronology. On the other hand, the classification of such classes as Science obeys the *natural* order.

## 29. READINGS.

FOWLER. *Inductive Logic*, chapter ii, section 2 to end of chapter.

JEVONS. *Elementary Lessons in Logic*, chapter xxxii.

— *Principles of Science*, chapter xxx, pages 685-710.

RICHARDSON. *Classification*, Lecture II, sections 6-10.

BROWN. *Library Classification and Cataloguing*, chapters i. and ii.

— *Subject Classification*, Introduction, sections 5-6.

Read also the article on "Classification" in *Rees's Cyclopædia*.

## 30. QUESTIONS.

(1) Define the difference between natural and artificial classification.

(2) Describe the Linnæan classification of plants, and compare it with the Natural System.

(3) What is the *difference* in the classification of Zoology ?

(4) What is meant by evolutionary order ?

(5) The " Subject Classification " is said to be according to evolution. Is it, and can you prove your opinion ?

(6) Explain the statement, " Nearly all book classifications are a compromise between the natural and artificial arrangements."

## CHAPTER IV

THE PROCESS OF DIVISION, BY EXTENSION AND  
INTENSION. THE DIFFERENCE BETWEEN A CLASSI-  
FICATION OF KNOWLEDGE AND A CLASSIFICATION  
OF BOOKS THE LIMITS OF CLASSIFICATION

31. THE Latin motto of science which expresses the fact that nature never makes a leap is also true of Classification ; there must not be leaps in the divisions of a scheme. *In the process of sub-division, the steps should be gradual, each term modulating from the term before it, and into the term following ; thus exhibiting perfect co-ordination of subjects.* It can be shown from any logical or evolutionary scheme of classification that the main divisions to some extent modulate into one another ; where this cannot be affirmed—as in the main divisions of the Dewey classification it cannot—the arrangement is theoretically at fault. We must not confuse theoretical perfection with practical usefulness however ; but what we wish to affirm here is that, generally speaking, such modulation exists. In the Subject Scheme for example :

Matter and Force

are the factors from which are developed

Life,

which is the factor from which is developed

Mind,

which in its turn gives rise to the chronicle of its workings in

Record.

Here we can trace the subject forward and backward. So, when we deal with sub-divisions, each one should modulate gradually into the next, the extension of the terms becoming smaller, their intension becoming greater.<sup>1</sup>

32. The schedule which results from the arrangement of subjects in a descending order of steps, if it is carried out thoroughly, will be exhaustive. That is to say, each division will provide a place for each and all of the subjects that can possibly be ranged under it. To repeat one of our fundamental canons : *The enumeration of the parts of a classification must be exhaustive.* In this relation the rule formulated by Richardson applies : " The value of a system is increased in direct ratio to its generalness of use." It is perhaps necessary to explain a little further. A classification of universal knowledge must embrace all past, present, and possible knowledge ; although the vortex theory of the earth, the search for the philosopher's stone, the endeavour to square the circle, may be absurd theories, there must still be places for them in a general scheme of classification ; and no scheme can be universally useful unless it does admit such places. But it must not be assumed that every one of these topics need be *named* in the scheme ; we would only assert that it

<sup>1</sup> Compare *Canons of Classification*, sections 26, 44-47.

should be possible to insert any new, or newly-discovered, topic at any point without dislocating the general sequence. This is done in practice by finding the nearest related head in the scheme and making a place for the new topic where it will most nearly modulate into the terms before and after it. Thus the rule of exhaustiveness applies to general schemes ; but it does also to schemes dealing with a special topic. All the conditions we have mentioned would apply to a classification of butterflies or of photography. This quality of hospitality in a classification is called variously its adjustability, flexibility, or expansibility.

33. So far our attention has been directed to those general principles which govern both the classification of knowledge and the classification of knowledge as contained in books. It is hardly necessary to say that there are schemes of classification directed solely to the arrangement of books ; and we must now make a clear distinction between the two forms of classification. That of knowledge is only limited by knowledge itself. Our *ideas* of things can be so completely analysed that we can arrange them in perfect sequences ; the schedules can modulate with perfect and gradual steps. *But the classification of books is conditioned by the physical form of books.* If treatises were written on every specific subject in the universe, we might approximate to the knowledge classification in our arrangement of books ; but books are complex things, the general treatise hustles the



monograph ; there is the encyclopædic work and the work of composite nature which treats of two, three, or more subjects. It is clear that there can be no absolute, perfect co-ordination in the arrangement of the subject-matter of these various works. The designer of a bibliographical system must adjust the knowledge classification so that it will embrace as many books as possible in their entirety, and must then compromise. It must be clearly borne in mind, however, that the classification of knowledge should be the basis of the classification of books ; that the latter obeys in general the same laws, follows the same sequence. A little consideration will show us how books overlap. Consider, for example, a general work dealing with forty distinct topics—one scientific, another artistic, another historical, and so on. In classifying such a book it is clear that if we put it under science we lose or ignore all the other subjects of which it treats ; the book is *composite* and is not co-ordinated with the books around it. But a book is a concrete, indivisible thing, and we cannot split it into forty parts and assign each part to its proper subject. We can only put the book as a whole into one place. Therefore, unless we adopt some artificial expedient, some part of the significance of the book will be lost by our classification. One solution of the difficulty would be to obtain forty copies of the book and place one under each topic represented in the book, but we need hardly emphasize the fact that recourse will

not frequently be made to such a method. Consequently, as he can place the book only under one heading, the classifier has designed, as we shall show more fully later, a *generalia* class in his scheme. In the Dewey and Cutter schemes such a class exists called General Works, in Brown it is called Generalia. This class receives all such works as cannot be received by any one single class, but which overlap several classes. Where a book deals with only two or three subjects this generalia class is not used, but the book is placed under the predominating topic, and *references* are made from the second or third topics, as we shall make clear later. The generalia class is simply for books of such miscellaneous subject-matter that they cannot be referred logically to any class. It was partly on this ground of the composite character of books that Jevons called book classification a "logical absurdity." His habitual use of dialectical refinements, and, probably, his want of familiarity with book classification, led him to overlook the many practical adjustments the librarian makes in adapting the classification of knowledge to the requirements of a classification of books.<sup>1</sup>

34. Although we have found an arbitrary and not perfect place for our book of forty topics (at the same time it is the only practical and feasible place), it may be very desirable to record the forty topics so that the material is brought within the cognizance

<sup>1</sup> The best discussion of Jevons's declaration is that in chapter vi of Brown's *Library Classification and Cataloguing*.

of the students of each of these topics. This brings us to a discussion of classified cataloguing. The classed, subject, or classified catalogue, as it is indifferently called, was really the origin of modern bibliographical classification. It is only recently that classification to any great extent has been applied to actual books on shelves ; and in recent years much of the criticism directed against the classification of books has been based upon a misconception of the functions of these two forms of classification. A book on the pyramids may be historical, architectural, or antiquarian ; in fact, it may treat the subject from all these points of view ; but, as Duff Brown has pointed out (in connection with a similar work on the steam engine), the subject is the pyramids, and under this heading the book would be placed irrespective of the method of treatment. It may, however, be desirable to bring the book to the notice of historical, architectural, and antiquarian students. This is done by means of the *classified catalogue*. A catalogue may be arranged in exact accord with any bibliographical scheme ; and it has this signal advantage over books on shelves. While a book itself can only go in one place, in the catalogue all the elements that go to make up the book can be dissected, and each one placed under its specific heading. Consequently, our book of forty topics would receive forty entries in the catalogue ; and our book on the pyramids would receive entries under history, architecture,

archæology, in addition to that under the pyramids. How far such *analytics* should be carried out in a classified catalogue would depend entirely upon the value of the parts of such composite books. Clearly trivial articles or chapters would not be catalogued, and it would be a rare occurrence to make so many as the forty entries of our hypothetical example. All we wish to emphasize at this point is that while a book is a rigid concrete article, an indivisible entity, and therefore a thing which can only be placed in one position, the *idea* of a book—that is to say, its name—can be transferred from one paper to another, can be written in a hundred or a hundred thousand different places. Similarly, the ideas—or names—of its component parts, its chapters, can be separated; they can therefore be recorded, according to their topics, in as many places as we please in the catalogue. A perfect classified catalogue, therefore, analyses books in much the same manner as a chemist analyses chemical compounds. Nevertheless, let it be remembered that the majority of books *do* treat of individual topics, such as the sea, butterflies, English history, and so on, and may therefore be classified in a specific place in the classification scheme without overlapping other classes.

#### 34. READINGS.

BROWN. *Library Classification*, chapter vi.

RICHARDSON. *Classification*, Lecture II.

JEVONS. *Principles*, chapter xxx, pages 710-22.

BROWN. *Subject Classification*, Introduction, sections

## 35. QUESTIONS.

(1) Demonstrate and explain how the functions of a classification and those of a catalogue are often confused.

(2) Rearrange the main divisions of Dewey in an order more perfect theoretically, and give reasons for each of your changes.

(3) "A bibliographical classification is conditioned by the physical form of books." Explain.

(4) Demonstrate that a classification never "makes a leap" in its process of subdivision.

(5) Explain what is meant by the flexibility of a classification.

(6) What are the functions of a "generalialia" class?

## CHAPTER V<sup>1</sup>

THE PARTS OF A BIBLIOGRAPHICAL CLASSIFICATION.  
THE DIFFERENCE BETWEEN TOPIC AND FORM.  
FORM AS ARRANGING CHARACTERISTIC. AR-  
RANGEMENT BY TOPIC, THEN BY FORM. THE  
INDEX.

36. WE are now in a position to deal solely with bibliographical classification. As the matter is of importance, the reader will excuse a brief recapitulation, in the shape of a long definition, of the cardinal principles we have gathered from our study of the subject so far. We may define thus: "A bibliographical classification is an adaptation of a knowledge classification to the peculiar form of books. It obeys the same rules and follows the same order of division as a classification of knowledge, but the extent of that division is strictly conditioned by the physical form of books. Such a scheme must proceed always in gradual steps from the general head to the special, the characteristic chosen for the arrangement being the most useful one for the purpose for which the scheme is designed ;

<sup>1</sup> The student should have the Decimal Classification at his elbow in reading this chapter, and should look up the examples as cited.

its terms must be mutually exclusive ; and must be used in an invariable sense throughout ; the enumeration of its parts must be exhaustive ; it must provide places for past, present, and possible knowledge, by permitting the insertion of any fresh topic at any point ; and, finally, for its practical application, it must be equipped with a notation and an index."

37. We have now a clear idea of a schedule, and we will take the Decimal Classification and study it, not with a view to explaining this particular system itself—that we shall do with some fulness later—but with a view to understanding aright the parts of a bibliographical scheme. It will be seen that Dewey divides the field of knowledge strictly into nine parts :

- 1 Philosophy.
- 2 Religion.
- 3 Sociology.
- 4 Philology.
- 5 Natural Science.
- 6 Useful arts.
- 7 Fine arts.
- 8 Literature.
- 9 History.

If we think of any book whatsoever that treats of a specific subject we shall recognise that a place can be found for it in one or other of the divisions before us. If all books dealt with specific subjects the schedule in its main divisions would be complete. But books do not deal with specific subjects always, as we saw in our last chapter. The encyclopædic or



composite book remains to be dealt with, and to meet this need a tenth class, General Works, is provided. The usual idea of a generalia class is one in which can be placed works which, although dealing with many or all of the other divisions of the schedule, are of so miscellaneous a nature that they cannot be said to belong to any particular one. Brown has broken away from this orthodox idea, and he submits instead (see introduction to the Subject Classification, section 6) that the subdivisions of generalia are to hold not only all general works, but all such subjects as are pervasive; that is to say, subjects—such as the logical and mathematical sciences—which are used in many branches of science, but are peculiar to none of them. At present, however, we may regard generalia as the “waste-paper basket” of the classes, to receive very composite works. Hence we see that Dewey’s 000 embraces bibliography, library economy, cyclopædias, general collected essays, magazines, transactions, newspapers, polygraphy, etc., all of which are of composite character. The generalia class is therefore the first adjustment of the knowledge classification to the form of books.

38. If we look at the remainder of the main divisions of the Decimal schedule we shall recognise one or two other things. We shall see that all the divisions from 1 to 9, with the exception of 8, deal with distinct subjects; for example, Philosophy, Religion, and History are definite subjects, convey-

ing ideas of particular forms of knowledge to our minds. But in Literature it is not so ; literature is a form. Here we arrive at an important distinction in classification. *Every bibliographical scheme has topic or subject classes, and form classes.* What the subject class means is quite clear to us ; in it the book is arranged by its subject or its predominating subject ; in the form class, on the other hand, the book is arranged not by the subject but by the form in which the subject is presented. Thus, the division Literature subdivides by the accident of language, which, it may be noted, has no definite bearing upon the subjects of the books. The sections of the subdivisions are poetry, drama, fiction, essays, oratory, letters, satire and humour, and miscellany. If I mention poetry, you have immediately the notion of words cast into a metrical form, but from the subjectival side you infer nothing ; poetry may be religious—as Milton's ; didactic—as Pope's ; it may be classical—as some of Tennyson's and much of Keats' ; it may deal with love, wine, or war ; but we learn nothing of this from the word poetry. But all of these poems, irrespective of subject, are arranged together simply by their form. Similar reasoning applies to drama, fiction, essays, oratory, or letters ; these may deal with any subject, but in the arrangement that is ignored. (The student should, however, bear in mind carefully that a book of orations, or essays, or letters dealing all of them with one topic, would not be placed in a *form* class ;

thus "Letters on Evolution" should be placed in Biology under Evolution, while "Speeches on Tariff Reform" would go under Political Economy; but "Speeches on Various Occasions," or "Letters to My Family," would deal with no special subject and would therefore be relegated to the form class.) To crystallise the above into a definition: *A form class is one in which the book is classified not by its subject-matter, but by the form in which the subject-matter is presented.*

39. The distinction just made is a very simple one; but there is a somewhat more difficult application of the principle of "form" in classification to which we invite the particular attention of the student. If we glance at the full tables of the Decimal Classification, say under 500, Science (but any other division will serve as an example), we shall see that the beginning of the schedule of the subject embraced by the division is devoted to general works on the subject, and may be defined in the same terms as the main generalia division, except that instead of applying to the whole classification, as does the main division General Works, it applies to the class Science only. Notice, also, that the subdivisions 501 to 509 are a *specialized* replica, to some extent, of 001-009, the subdivisions of General Works. To quote at random: 501 deals with the philosophy, the theory, or the utility of Science in General; 503 with dictionaries of Science in General; 506 with periodicals of Science in General; 509 with

the history of Science in General. Now these are the "form divisions" of the subject Science in General. Special "forms" differ from general "forms" in this way. The periodical *The Spectator* deals with all kinds of topics, general history, politics, literature, art, science; in fact, everything comes within its scope. Its place in a scheme of classification is, therefore, under General Periodicals; in the Decimal scheme it goes under 050. On the other hand the periodical *Nature*, as compared with *The Spectator*, is a special periodical, because it is devoted to Science. It will, therefore, go first under Science—which is its "subject"—and then, within the class Science, under periodicals—which accords with its "form." Note again that while *Nature* is special as compared with *The Spectator*, it is general in regard to the class Science. It is general, therefore, in comparison with *The British Astronomical Association Journal*, which deals entirely with Astronomy, or *The Journal of the Chemical Society*, which is special to Chemistry. Similarly, as we pass down the general form divisions of Science, 501-509, we must remember that the same rule applies. Premising a work on "The Evolution of Scientific Ideas since Thales," we must place it first under its subject, which is evidently General Science, and then under its form, which is evolution, or history; hence in the Decimal scheme under 509. When we come to more minute heads the same rules still prevail. The main division Physics is equipped with a series

of form classes, philosophy, dictionaries, etc.; see 530·1 to 530·9. Hence a book on the theory of physics will be arranged first by its subject, Physics; then by the form in which it is presented, theory, i.e. philosophy; hence in the Decimal scheme under 530·1. In learning this distinction between form and subject, we have become cognizant of a rule of practical classification, which we shall develop later, “*Classify ‘first by topic, then by form,’ except in the form classes, where form is paramount.*” Although we have taken our examples from Dewey, it must be remembered that every other scheme is equipped with Form Classes. In the Subject scheme the form divisions under the topic classes are obtained by means of *Categorical Numbers*, which have the same functions as the numbers 501–509 in Dewey. This, again, we shall deal with further when we come to consider the Subject scheme itself.

40. From the two foregoing paragraphs we may infer a useful but rather subtle division of form into *outer* and *inner*. Outer form is said to be objective; that is to say, it represents the physical make-up of a book. A periodical has a miscellaneous form which appears in various recognisable physical shapes; an encyclopædia has the obvious outer arrangement of an alphabetical or classified order of subjects; poetry has the outer form of metre; and dictionaries, collections of essays, and most of the works which appear in the generalia or form classes have outer form. Inner form is subjective, and

usually represents the method of treatment ; thus, a work on the philosophy of science is one upon a specific subject treated in a special form ; the history of geography is similarly a method of treating a subject ; the theory of history is another example, and each of these methods of treatment is said to be the inner form of the book. A few examples of each kind will perhaps make the distinction more obvious.

Outer form :

The Encyclopædia Britannica.  
Dictionary of Dates.  
Nineteenth Century Review.  
Essays in Little.

Inner form :

The History of Science.  
The Theory of History.  
The Philosophy of Languages.

Outer form, in brief, depends upon the physical arrangement of the matter in books ; inner form depends upon the method according to which that matter is written. Examination will show that while the generalia and form classes of Dewey are mainly for books that have outer form, the form divisions are largely for those having inner form.

41. A valuable feature of a bibliographical classification scheme is the *Index*. The index must include all the names (terms) mentioned in the schedules and all the synonyms of these names. It should show all the minute parts of a subject, so far



as practicable, parts which are included in the terms in the schedules but are too minute to be set out in them. The principal value of the index is to ensure that a subject always has a constant place in the scheme. For example, when Radium was discovered the treatises expounding it demanded a *decision* in classification. Some libraries placed them under electricity (Dewey 537) while others placed them under the Metals in Chemistry (Dewey 543). Although the latter head is to be preferred, as it brings Radium beside Uranium and its other cognates, the important point is not so much which head should be chosen as that the one selected should be remembered and used consistently, so that all books on Radium may be found together. Hence, when the decision was made, the classifier entered it in the index of his scheme as a check on the future placing of books on the subject.

42. Indexes are of two kinds, *specific* and *relative*. The specific index shows only one place for each subject, and the index to the Subject scheme is of this variety. It does not show the relations of Subjects.<sup>1</sup> A relative index shows every aspect of a topic. For example, in the Subject scheme the topic Sugar receives references I885, which deals with it as an industrial product, and E348, which deals with the sugar-cane as a member of the botanical group. The index ignores the use of sugar in confectionery, and in fact any other aspect of it.

<sup>1</sup> See *Canons of Classification*, sections 36, 59, 63, 94.



The reference is really one reference to Sugar I885. This is called special, or specific indexing. On the other hand, the Decimal scheme shows the following under the heading :

Sugar, adulterations . . . .	614.311
„ cane, agriculture . . . .	633
„ manufacture . . . .	664.1
„ organic chemistry . . . .	547.3
„ refinery . . . .	664.1
„ refining, air pollution . . .	614.734
„ vegetable drugs . . . .	615.352

Hence we are shown all the functions of Sugar, all the correlatives of the topic. Now, there must be places in the Subject scheme for all these relative topics, but they are not shown in the index. The Decimal therefore has a relative, the Subject a specific index. The student should note carefully that an index is an aid to, not a means of, classification. Books should always be placed by study of the main schedules, with a distinct understanding of the heading under which they are placed. Placing by the index would lead to all kinds of ridiculous anomalies.

#### 43. READINGS.

JEVONS. *Principles of Science*, chapter xxx, pages 722-34.

BROWN. *Library Classification*, pages 59-61.

SAYERS. *Canons of Classification*, sections 26, 36, 44-7, 59, 63, 94.

#### 44. QUESTIONS.

(1) One librarian asserts that Haddon's *Evolution in Art* should be classified under evolution ; another that

it should be placed under art. Which do you prefer, and why?

(2) What is meant by "topic" and "form" respectively?

(3) The periodical *Nature* is special in relation to the whole of knowledge, but general in relation to science. Explain.

(4) How might the placing of books by means of the index lead to absurd anomalies?

(5) Define the difference between a relative and a specific index. Which form is best? Illustrate your argument.

(6) How would you distinguish between history as a subject and as a form?

## CHAPTER VI

### NOTATION. AUTHOR MARKS. BOOK NUMBERS

45. WHENEVER names or phrases are constantly repeated in any science or art, the workers in that science or art construct a series of abbreviations or symbols to represent such names or phrases. In chemistry, for example, the elements are represented by initials or arbitrarily chosen letters ; as H=hydrogen, K=potassium, Be=beryllium, and so on, symbols by which chemical combinations can be expressed briefly. Similarly, the classifier of books produces a symbol to stand for the name of a class or any division or section of it. When arranging books on the shelves it is usual to indicate the subject which is the basis of the order upon the books, and it is clear that in arranging a number of books, say upon Cosmogony, the classifier cannot write upon each the name of its topic, as

Cosmic evolution.

Nebula hypothesis.

La Place's theory.

Fayer's theory.

Darwin's tidal reaction.

such writing would be most inconvenient. He writes instead, if he uses the Expansive system, the following expressions

L RYC  
L RYE  
L RYI  
L RYK  
L RYL

which represent respectively the names of the subjects. These symbols are called the notation of a classification, and the letters or figures of such a notation are variously called the call-marks, class-marks, arranging-numbers, placing-numbers, or classification-numbers of the scheme.

46. Classification *theory* does not presuppose notation, and classification itself—which is arrangement—must not be confused with notation, but without it the *practical* application of any scheme is impossible. A notation has been defined as a shorthand sign to represent the name of a class or any division or sub-division of a class. In the earlier writings on classification it was assumed that the notation was chosen—or designed—first, and the schedules of the scheme hung upon the notation. Our previous remarks must have dispelled that idea ; but it is true that the choice between one of two classification schemes is often made by the librarian upon the question of the relative simplicity of the notation in the two schemes. Notation, however, is really a subsidiary part of classification itself,

but it is sufficiently important to merit careful attention.

A notation, then, is a shorthand sign, and it may be of arbitrary characters  $\Delta$  + and so forth, as in Smith's scheme (1882), or of figures, or of letters, or of a mixture of any or all of these signs. In fact, a notation may be any sign that can be made to represent words.

47. A notation which consists entirely of one kind of symbol, say of letters or of figures, is called a *pure* notation ; one that consists of two or more kinds of symbol is a *mixed* notation. It will be seen that the Decimal classification has a pure notation—one entirely of figures ; that the Expansive is practically pure, being, except in the case of the Local List numbers, entirely of letters ; and that the Subject classification has a mixed notation composed of letters and figures. Theoretically it may be assumed that a perfect notation would be pure, as the sequence of similar symbols is more easily apprehended than one of dissimilar symbols. Again, much controversy has existed concerning the relative advantages of numbers and figures ; the advocates of the Decimal system asserting that a sequence of numbers is more easily followed than a sequence of letters ; while the advocates of the Expansive urge the same virtue on behalf of their scheme.<sup>1</sup>

<sup>1</sup> The discussion of T. A. Aldred's paper on "The Expansive Classification" (*L. A. Record*, vol. vii, pp. 196-201) may usefully be read in this connection.

48. The conditions that a good classification notation must fulfil are these :

- (1) It must be simple.
- (2) It must be brief.
- (3) It must be flexible.

We shall now define these criteria. (1) Simplicity, as will already have been gathered, consists in the ease with which anyone can understand the symbols used. A collection of arbitrary signs,  $\Delta + =$ , etc., is not easily carried in the mind or not as easily as a collection of more commonly known symbols. Experience has proved that the simplest, and therefore the best, notations are those composed of figures, or letters, or combinations of both. (2) The simplicity of the notation is clearly connected with, and to some extent dependent upon, its brevity. A "shorthand sign" is valuable in proportion to the shortness of the time it takes in writing or in reading. A notation of three figures is more easily remembered than one of six, and still more than one of ten. Similarly, AGF is more easily followed than ARTZLY, or H10 than H145Z23. Consequently, the designers of classification schemes have aimed at producing the greatest possible number of *class-marks* with the fewest possible symbols. A recent well-known advertisement has the following comparison. The book to be marked was *The Bibliography of the Prayer Books of the Unitarian Chapel at Islington*, and the resulting symbols were :

Subject classification K740·685 U916·1.

Expansive classification ZWCIUNCU·45 LO Islington.

Decimal classification 016·2641288421 Islington.

(Brussels Expansion) 016:264·08(42·1 Islington)—06.

We advise great care in forming a conclusion upon this point, because a close classification must have more symbols, because it has more divisions, than one less close ; and the reduction in the number of symbols sometimes means an unwarranted loss of minuteness. And, although we have just said that a brief notation is better than a longer one, it should not be thoughtlessly said that eight figures are more difficult to remember than six letters, or five figures than two letters and two figures ; or vice versa in each case. On this, however, the student should form his own conclusion.

49. (3) Of much more importance is the flexibility of the notation ; and in describing this it will be well to explain how a notation is built up. Given a schedule of topics the classifier applies a certain symbol to the main headings, which is expanded in the divisions, further expanded in the subdivisions, and still further in the sections, and so on *ad infinitum*. For example, Dewey divides Botany, which is a main division, into ten subdivisions (this is not strictly accurate, but sufficiently so for our present contention). The main division he marks 580, and then gives a figure to each of the subdivisions, thus :



580	Botany.
581	Physiologic and structural.
582	Phanerogamia.
583	Dicotyledonæ.
584	Monocotyledonæ.
585	Gymnospermæ.
586	Cryptogamia.
587	Pteridophyta.
588	Bryophyta.
589	Thallophyta.

Each of these ten subdivisions is again divisible into ten sections, which are marked by an additional digit ; as :

583	Dicotyledonæ.
583·1	Polypetalæ.
583·2	Geraniales.
583·3	Rosales.
583·4	Myrtales.

and so on. And these may again be divided by another ten, as :

583·4	Myrtaleses.
583·41	Rhizophoreæ.
583·42	Myrtaceæ.
583·43	Melastomaceæ.

and in this way the division may be carried as far as the subject demands. In a like manner the Expansive classification starts with an alphabetic base ; as :

A	General Works.
B	Philosophy.
C	Christianity.

and so on, and each of these is divisible by adding another letter ; as :

V	Recreative Arts.
VI	Racing.

etc. ; which again may be divided by another letter ; as :

VI      Racing.

VIW    Bicycle racing.

etc. From these brief examples from two classification systems we may note in passing that while the addition of another *figure* in the Decimal scheme gives *ten* new places, the addition in the Expansive scheme of another *letter* gives *twenty-six* new places, owing to the fact that the *alphabetical base* is larger than the *decimal base*. Hence in three symbols Dewey can supply 1000 places, while in the same number Cutter supplies 17,576. We now return to the statement in our criteria that a notation must be flexible. It is evident that, although the large divisions of knowledge are settled, knowledge may change in its details ; or, to express it another way, the genus may remain constant, but the species may in course of time vary. New subjects may be discovered, as only a few years ago the radio-active element radium. Hence we must, as we have before demonstrated, find a place for changed or new topics in our schedules and, as a corollary, in our notation. Bearing in mind what we have said about the method of notation division above, we can, when a new topic appears, find the head in the classification most nearly related to it, and there make a place, in the Decimal scheme by adding a figure, in the Expansive by adding a letter, and in the Subject by very similar methods, which will be described

more fully when we deal with the individual schemes.

50. A further advantage in a notation is its mnemonic character, or the use of symbols in such manner that they have a more or less constant meaning which applies all through the scheme. Dewey has several examples of this, which may be studied in full on page 16 of *The Decimal Classification*. There it will be seen that the figure for India always contains the number 4, Egypt 2, England 2, Germany 3, France 4, and so on. This mnemonic value need not be exaggerated.

51. The notations of modern schemes of classification permit of various manipulations to denote points of view and the relations of topics. We do not propose to do more than indicate these as they can be studied best in the schemes themselves. The most valuable is the method of *geographical* division, which occurs in nearly every scheme. In Dewey it is performed by adding the number for the country to the number of the subject. We frequently meet with the direction "divided like 930-999," and an examination of the table shows that these figures stand for the history of particular countries—the 9 representing "history"; the remainder of the number the country. Thus 942 is the history of England, 943 the history of Germany, and so on. In subdividing a topic geographically we ignore the history figure 9, and add for England 42, for Germany 43, and so on. Examples :

- 550 Geology.
- 554.2 Geology of England.
- 607 Schools of Technology.
- 607.42 Schools of Technology in England.
- 607.43 Schools of Technology in Germany.
- 282 Roman Catholic Church.
- 282.45 Roman Catholic Church in Italy.

and so on. The Expansive classification secures a similar result by an elaborate Local List, consisting of numbers, having, as in Dewey, an invariable geographical meaning, which are added to the subject numbers. Similarly, in the Subject classification the local numbers may be added to any subject number in the scheme to make geographical subdivisions.

52. Perhaps the most elaborate series of signs auxiliary to notation are those designed for the elaborate expansion of Dewey by the Institut Internationale of Brussels. These are known as *relation marks*. (We have translated the following from the first fascicule of the *Classification Decimale*, published by the Institut. Those who read French are recommended to obtain this fascicule.)

“The auxiliary tables are as follows. They are each indicated by conventional bibliographical signs :

- I. Subdivisions of Form and General Works (0)
- II. Subdivisions of Place . . . . (2 to 9)
- III. Subdivisions of Language . . . . =2-9
- IV. Subdivisions of Time . . . . “ . . . ”
- V. Subdivisions of Points of View . . . . 00
- VI. Subdivisions of relations . . . . :
- VII. Subdivisions of Proper Names . . . . A-Z

The signs of combination which enter into the formation of the number are designed to distinguish clearly the different parts of the number, to prevent confusion between the respective figures, and to make possible the indefinite development by direct decimal division of the numbers of the classification with which they combine.

The combining signs and the letters which characterise the common subdivisions form, with the figures 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, a single series of classification symbols which themselves follow the subjoined order of succession :

( ), " ", =, :, -, A-Z, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9.

The common subdivisions enumerated in the auxiliary tables may be combined, term by term, with the divisions of the principal table. Take these subdivisions :

(05)	Reviews of
(44)	France
=3	In the German Language
" 17 "	Eighteenth century

By combination with the numbers of the heads of the principal tables we shall obtain :

53 (05)	Reviews of Physics.
385 (44)	Railways in France.
220.5 =3	Versions of the Bible in German.
338.8 " 17 "	Trusts in the eighteenth century.

and so on."\*

\* The student may pursue these tables further in the admirable paper "Dewey Expanded," by H. V. Hopwood (*Library Association Record*, June, 1907).

53. The above are to express standpoints, forms, relations, and points of view. Further auxiliaries have been designed to individualise authors and even books. The principal of these and the most elaborate are the Cutter Author Marks. These are fully explained at the end of Cutter's *Expansive Classification: First Six Schemes*, and very full tables of the marks have been worked out by Sanborn and published by the Library Bureau. They are alphabetizing tables, consisting of the initial letter or letters of the author's name (or, in the case of anonymous books, of the first word not an article or preposition of the title ; or, in biography, of the surname of the biographee) followed by a decimal number. A single letter is used for names or words commencing with all letters except S and vowels, for which two are used, and the combination Sc, for which three are used. The method of application is simple. The books "are kept alphabeted by authors by marking them with the initial of the author's family name, followed by one or more decimal figures assigned according to a table so constructed that the names whose initials are followed by some of the *first* letters of the alphabet have the *first* numbers, and those in which the initials are followed by later letters have later numbers." E.g. :

Gardiner G16, Gilman G42, Graham G76, etc.

Saint Sa25, Soper So60, etc.

Schneider Sch43, Schrift Sch83, etc,

This is added to the classification number after a small space ; e.g. :

F45 G16. Gardiner's *History of England*.

The marks may be applied to the notation of any scheme.

54. An English author mark in use in some libraries is that devised in 1900 by Mr. L. Stanley Jast,<sup>1</sup> as a simple alternative to the letter mark. The number consists of the first *two* letters of the author's name, and names commencing with the same two letters are distinguished by the figures 1, 2, 3, etc. The alphabeting is not strict ; authors are numbered in the order of their arrival ; thus, if Johnson and Joyner have already been marked JO and JO1 respectively, and Jones is added, he is marked JO2, and if Jobson is then added he is JO3. In Fiction and English Literature the first three letters of the name are used with the same subdivisions. Individual works of an author are marked by the addition of the initial letter of the title after a decimal point, and other titles commencing with the same letter are marked 1, 2, 3, etc. ; thus, Shakespeare's *Macbeth* is SHA·M, his *Merchant of Venice* SHA·M1 and his *Midsummer Night's Dream* SHA·M2. Collected editions of an author are marked simply by the three letters, but different editions or duplicates are marked by a

<sup>1</sup> Jast, L. S., " A New Book Number " (*Library World*, vol. iii, pp. 120-3, 150-2).



lower-case letter, a, b, c, etc.; thus SHAA is a second copy of Shakespeare's *Complete Works*, and the principle may be extended to duplicates of individual works; thus SHA·Ma may indicate a second copy of *Macbeth* and SHA·Mra a second copy of *The Merchant of Venice*. Individual biographies are marked by the first three letters of the biographee with the first letter of the author's name as the work mark; thus, Morley's *Life of Gladstone* is marked GLA·M. If strict alphabetical order is desired—as is usually the case—the numbers added to the initials may be treated as decimals; thus:

Harder	HAR <sub>2</sub>
Hardman	HAR <sub>25</sub>
Hardy, I. D.	HAR <sub>3</sub>
Hardy, T.	HAR <sub>35</sub>

55. An approximate alphabetical arrangement may be secured by the use of the Merrill numbers, which are limited to 100 places. A sample is as follows:

01	A
02	Agre
03	Als
04	Ap
06	B
07	Ban
08	Bax
10	Bix
11	Bou
12	Brim
13	Bum
14	C
15	Carr
	etc.

This number can be added to any subject number, but in applying them to the Decimal system they should be separated from the subject number by curves or a dash to prevent confusing them with the latter. An anglicised version of this number, by Mr. James D. Stewart, was published in *The Library Association Record*, vol. 9, pages 244-5, 1907.

Various other interesting and suggestive auxiliaries of notation may be found in the respective introductions to the Decimal and Subject classifications.

56. The chronological arrangement of subjects may be secured by the use of the Biscoe Time numbers, which provide for arranging books by the years from 1000 B.C. to A.D. 2000, as follows :

A	BC
B	AD1-999
C	1000-1499
D	1500-1599
E	1600-1699
F	1700-1799
G	1800-1809
H	1810-1819

and so on to Z, which represents 1990-1999. It will be seen that the numbers A-C represent long historical periods, in which it is assumed that few books were published, D-F centuries, and G-Z periods of ten years in the two centuries nearest to us—the nineteenth and twentieth. To indicate the exact date of a book we take the letter nearest to the date, and omit that part of the date which is indi-

cated by the letter and add the remaining figures of the date ; thus :

A	333	=	a book published B.C. 333.
B	450	=	one published in A.D. 450.
C	273	=	one published in 1273.
D	12	=	one published in 1512.
H	5	=	one published in 1815.

When more than one book in the same class calls for the same number a lower-case letter is added ; thus :

Bentley.	Botany 1856	is	580L6.
Hooker.	Botany 1856	is	580L6a.

57. It is perhaps permissible, as a conclusion to our survey of purely theoretical classification, to plagiarise Richardson's criteria. These have been assimilated to some extent in the foregoing chapters, but there are important and suggestive differences to which it is advisable to pay special regard.

#### CRITERIA OF A PRACTICAL BOOK CLASSIFICATION

I. It should follow as nearly as possible the order of things. A properly classified library is perhaps the nearest thing there is to a microcosm. A human mind which knew all things might be more perfect in this respect, but in reality no one can or does keep the whole of things in mind as a library does. It must therefore follow the order of complexity or of history, or, if you please, of evolution.

II. It should be carried out in minute detail.

III. It should be provided with a notation which will allow for indefinite subdivision, using mixed symbols, but with a predominating decimal base.

IV. It should be provided with a detailed and specific index.

V. The value of such a system is increased in direct ratio to the generalness of its use.—*Richardson. Classification.*

### 58. READINGS.

RICHARDSON. *Classification*, Lecture II and the Appendix, as far as they deal with notation.

BROWN. *Subject Classification*. The Introduction, as far as it bears on notation.

CUTTER. *Expansive Classification, Part I*, Appendix, pages 139 to end.

DEWEY. *Decimal Classification*, Introduction, pages 9-20 ; 26 to end.

SAYERS. *Canons of Classification*, chapter vii.

PUERNELL. "The Development of Notation in Classification." In *The Library Assistant*, vol. viii, pages 25-33, 44-50.

INSTITUT INTERNATIONAL DE BIBLIOGRAPHIE. *Classification Bibliographique Décimale*, Facsimile 1.

And also the literature mentioned in the chapter.

### 59. QUESTIONS.

(1) Comment on the criteria of a good notation.

(2) A notation must be flexible. Explain.

(3) The decimal base of notation is said to be narrower than the alphabetical. Is it? Prove your answer, and

construct two brief classification schemes for arranging "Photographs of Churches and Ecclesiastical Buildings," one having a decimal, the other an alphabetical base for its notation.

(4) Give three examples of books classified by Dewey, and individualised by Cutter Author Marks. Explain the process.

(5) What are the common subdivisions of the Brussels expansion of Dewey? Explain them.

(6) Why is a pure notation probably better than a mixed? Criticise that of the Subject Classification.

## PART II. HISTORICAL AND PRACTICAL

### CHAPTER VII

#### PRELIMINARY ON STUDENTS' READING

60. We have now covered briefly the principles governing the construction of classificatory schemes. It will be our business in the remaining chapters to see, first, how those principles have been applied by the constructors of schemes for the arrangement of books ; second, to become familiar with the three or four predominating modern schemes ; and third and finally, to consider the rules governing the practical application of such schemes of classification to books and to catalogues, and to discuss the various accessories, mechanical and other, necessary to make clear the features of the scheme adopted to the users of the libraries or catalogues.

61. On the historical side we shall attempt very little detail. Schemes for the classification of knowledge, being of small practical value and requiring more time than we can devote to their consideration, we shall ignore henceforth. Of course we have referred to them again and again in our theoretical

lessons, and have demanded a knowledge of the main features of the systems of Porphyry, of Linnæus, and the Natural System of Botany (and so much, at least, should be familiar to the student) ; but as every organised science has its classification and the principles of classification design do not vary, the student is now sufficiently acquainted with such systems. With this necessary narrowing of the field we still can only hope to be suggestive, not exhaustive. Much the student must work out personally, but we shall endeavour to give here all necessary indications for his study.

62. The essential textbook is Brown's *Library Classification and Cataloguing*, and the most complete and useful work, but unfortunately inaccessible to many, is Edward Edwards's chapter on "Classificatory Systems," in vol. 2 of his *Memoirs of Libraries*. Richardson's *Classification*, although it lacks the detail of Edwards, has for its appendix the best bibliography of classification. Students are fortunate who have access to these, and should use them where they have ; but we shall endeavour to reduce the difficulties of those who have not. In the historical portion, Brown's *Guide to Librarianship* will be found useful—the chapter by Mr. Jast on Classification. The literature mentioned in the brief bibliography that follows Mr. Jast's notes is rather too extensive ; paragraph 2 is useful, 3 and 4 may now be ignored ; the "General," under 5, is unnecessary ; but the remaining sections



are worthy of careful attention. In his valuable notes Mr. Jast gives a list of bibliographical schemes in chronological order (250 B.C.—A.D. 1905); this seems appalling at first sight, but must not be thought upon over seriously. It is undoubtedly useful to know something of every scheme from that of Callimachus to that of Brown, but it is essential to know some only of these. We shall endeavour therefore to explain the systems of Bacon, Bouilleaud, Brunet, the British Museum, Edwards, Dewey, Cutter, the Expanded Dewey of the Brussels Institute, and the Subject scheme of Brown. Each of these is in its way a landmark in the history of classification. Outlines of most of them will be found in Brown's *Library Classification*. His description of Bacon's—a most important scheme—is inadequate; this should be read up in Bacon's *Advancement of Learning*. Before chapter eight is read the student would do well to read book 2 of *The Advancement of Learning*, which explains minutely the schemes of classification propounded by the great philosopher. The language and phraseology are necessarily somewhat archaic, but they improve upon acquaintance, and the book is both an excellent conspectus of method and an admirable piece of dialectics. Any English edition will do; but that edited by W. A. Wright, and published at the Clarendon Press, Oxford, is equipped with useful notes and a glossary, as well as a schedule of the classification, and is therefore to be preferred. Brunet may be read in Rouveyre's

*Connaissances Necessaires à un Bibliophile*, vol. 9, pages 25-37, but I am afraid it will not be accessible to the majority of students. A somewhat inadequate account by the late Edward McKnight appears in *The Library Association Record*, vol. 6, pages 416-21. The Decimal and Subject schemes must be read in the schemes themselves ; access to these is essential. The Expansive scheme must be known in outline ; its notation and application thoroughly understood, and an acquaintance with the tables themselves is desirable. These three schemes, and the Library of Congress scheme, form the main subject-matter of *Canons of Classification*, which it is hoped the student will read in conjunction with this book.

63. On the practical application of classification the best work is the essay on " Library Classification " contributed by Mr. Jast to Greenwood's *British Library Year Book*, 1900-1 ; Savage's " Classification Guides and Indexes " in *The Library World*, vol. 8, 1905-6, and Sayers's *Grammar of Classification* will be found useful, and a necessary complement to these is to be found in chapter XV of Brown's *Manual of Library Economy*, second edition, 1907, and his *Library Classification*. chapter V.

## CHAPTER VIII

HISTORICAL. EARLY SCHEMES. BACON. BRUNET.  
BRITISH MUSEUM. EDWARD EDWARDS

64. THE classification of books is practically as old as libraries ; and we may assume that the earliest catalogues were classified. We know, for example, that in the library of Assur-bani-pal, King of Assyria, there was a catalogue inscribed on twenty-five clay tablets ; fourteen of which set forth the works on the knowledge of the earth and eleven on the knowledge of the heavens. We have other evidence that in these early libraries the books themselves were classified, the poetry being on one wall, the astronomy on another, and so forth. The great libraries of the Ptolemies at Alexandria, the wonder of the ancient world, had for their first librarian known to us by name the famous Callimachus, whose simple but comprehensive classification ran :

1. Poets.
2. Lawmakers.
3. Philosophers.
4. Historians.
5. Rhetoricians (Orators).
6. Miscellaneous writers.

It seems that the earliest librarian recognised the need of a generalia class. One must remember that the connotation of the terms used in this interesting early scheme has greatly altered. Philosophers would cover science and the arts, for example ; a breadth of extension almost equalling that of the scheme of a modern librarian who informed the writer that he had a class connotating Science, Art *and* Literature ! We cannot pause, even if it were desirable, to describe the shelf and catalogue arrangements of the Greek and Roman libraries ; suffice it to say that classification existed, and that in the matter of arrangement as well as in the liberality of their administration we have to admit regretfully that the libraries of old were often in advance of their modern prototypes.

65. Again, the libraries of the Middle Ages were broadly classified. Being in the majority of cases monastic foundations, the first characteristic of arrangement was orthodoxy—which, of course, implies the exclusion of its antithesis, heterodoxy. The sheep were separated from the goats. Without commenting upon these we pass rapidly to what is called—erroneously, as we have already seen—the first bibliographical scheme, that of Conrad Gesner, 1548. He divides the field of knowledge into two parts : Præparantes and Substantiales, and the complete schedules may be shown in brief as follows :

**Præparantes.**

## Necessaria.

## Sermocinales.

Grammar, philology, dialectics, rhetoric, poetry.

## Mathematicas.

Arithmetic, geometry, optics, etc.; music, astronomy, astrology.

## Ornantes.

Divination and magic, geography, history, useful and mechanic arts.

**Substantiales.**

Natural philosophy, metaphysics, theology, moral philosophy, economics, political philosophy, jurisprudence, medicine, Christian theology.

This interesting scheme is conditioned by the state of written knowledge at the time of its appearance. There is an attempt at the co-ordination of topics, but only in a general way, and in Substantiales we have widely different classes side by side, simply because in their Latin terminology they were "philosophies." "Poetry," as we shall see in the Baconian classification as well, connotes works of imagination in prose and verse; hence fiction is a division of poetry. It was by an interesting anticipation of Brown's derivation of Music from its root-science Acoustics that Gesner regarded it as a mathematical science and made it modulate from Physics (geometry, optics, etc.).

66. The system of Francis Bacon, 1623, is one of the most important in the history of our subject. Right down to modern times nearly every scheme has been an inversion, perversion or adjustment of this. It is the work of a powerfully analytical and

at the same time synthetic mind ; it is, to digress a little, the work of one who wrote the rather antique but beautiful definition of libraries : " the shrines where all the relics of the ancient saints, full of true virtue, and that without delusion or imposture, are preserved and reposed." The system, arranged in the form of a modern schedule, is as follows :

BACON'S CLASSIFICATION OF HUMAN LEARNING  
(i.e. as opposed to Divine Learning or Theology).

HISTORY (MEMORY).

NATURAL HISTORY.

History of generations.

(Heavenly bodies, earth and sea, " masses " or " greater colleges "—i.e. the four elements, " species " or " lesser colleges "—i.e. zoology and botany.

History of pretergenerations.

" Irregulars " of nature, such as monsters, witchcraft, and marvels.

History of arts (nature wrought or mechanical).

CIVIL HISTORY.

Ecclesiastical.

Special.

History of prophecy.

Divine judgments or Providence.

Civil history (proper).

Memorials (preparatory history).

Commentaries.

(" C. set down a bare continuance and tissue of actions and events, without causes and pretexts . . .")

Registers.

(Here come the public acts, edicts, etc.).

Antiquities,

Perfect history.

Chronicles.

Universal.

- Annals.
- Journals.
- Particular.
- Annals.
- Journals.
- Lives.
- Relations.
- Cosmography.
  - (Geography, navigation, climate, geography and astronomy combined).
- Learning and the arts.
- Appendices to history.
- Orations.
- Letters.
- Apophthegms.

## POESY (imagination).

- NARRATIVE.

- DRAMATIC.

- PARABOLICAL.

- (i.e. fables, allegory).

## PHILOSOPHY (reason).

- DIVINE (natural theology).

- NATURAL.

- Speculative.

- Primary philosophy.

- Physic.

- (Includes astronomy and astrology).

- First principles of things.

- Fabric of things, or the world.

- Variety of things.

- Concrete.

- (Divided like natural history).

- Abstract.

- Configurations of matter.

- (Rather *states* of matter).

- Motions.

- (Attraction and repulsion, etc.).

- Metaphysic.



## \* Operative.

Mechanic.

(Applied physic).

Magic.

(Applied metaphysic).

## Mathematic.

Pure.

Mixed.

## HUMAN.

Philosophy of humanity

(Man as an individual).

Nature or state of man.

(Includes miseries and prerogatives of his state  
and *mind and body*).

Body.

Medicine.

Cosmetic.

(Personal hygiene).

Athletic.

Voluptuary (sensual arts).

Painting.

Music.

Other arts of pleasure.

Soul.

Breath of life (rational soul).

Sensible or produced soul.

Motion.

Sense.

Substance and faculties.

Use and objects of the faculties.

Logic.

Art of discovering.

Art of judging.

Art of retaining (memory).

Art of transmitting.

(Here come grammar, speech, writing,  
rhetoric).

Ethic.

Philosophy, civil.

(Man in society).

Conversation.

(Includes etiquette and manners).

Negotiation.

(Conduct of business, personal fortune and advancement).

Empire or state government.

(Includes economics and law).

In *The Advancement of Learning* Bacon has expounded the principles of his system at length, explaining most of the terms which time has rendered unfamiliar or of which the meaning has changed. We shall therefore content ourselves with a few brief remarks on the scheme and direct the student to the work mentioned. Its three main classes are I. History, II. Poetry, III. Philosophy, the characteristic chosen as the basis of the arrangement being the mental faculties ; i.e. Memory, Imagination, and Reason. Memory translated into literature necessarily becomes all forms of History ; but the term has a wider connotation than now ; it includes Natural and Civil History, and the latter includes not only Ecclesiastical History but Literary History as well. Natural History has a curious extension over the sciences now denominated Astronomy, Geology, and Physical Geography, and Biology, with their divisions ; over the irregularities of nature ; and also, it should specially be noted, over the Arts now called Useful Arts, Technology, etc. Civil History and its subdivisions seem clear. Note, however, that Biography (Lives) is included in it, as in Dewey and other modern schemes ; as

also personal memoirs of particular events (Relations) ; and that Oratory, Letters, and Aphorisms, Proverbs and Maxims (Apophthegms) are considered as related to History. Poesy embraces all works of imagination irrespective of form. Note carefully the distinction between narrative poetry and poetry in parable form. Philosophy is an important class. Its divisions are Divine, Natural, and Human Philosophy. Natural Philosophy is Speculative, Operative, and Mathematical, and has the old connotation of the term ; that is to say, it takes in physics and metaphysics, applied physics and metaphysics, and pure and mixed mathematics. Human philosophy has two main aspects, physical (Body) and mental (Soul) ; Soul is used here in the Pauline sense. Closely cognate to human philosophy is Civil Philosophy, which, being partly interpreted in a modern term, is Sociology.

Such a scheme is naturally deficient from a modern bibliographical standpoint. The arranging of great main classes as subdivisions of three forms of the mental faculties would result, if now applied to books, in unwieldy sections, especially when we remember that only the main schedule of the scheme is given here and the subdivisions would all need to be added for its practical application. One can easily see this by considering how the simplest main division, Poetry, would have to be expanded before its use would be possible.

67. In the system of Bouillard (*circa* 1678) we have

the first application of a really sound bibliographical scheme to the catalogues of booksellers. Successively modified by Martin (1740), Debure (1768), and Brunet (1842), it became known as the French system, or the "system of the Paris booksellers." Here we see the three classes proposed by Bacon have been superseded by five: I. Theology; II. Jurisprudence; III. Sciences and Arts; IV. Polite Literature; V. History. These classes, worked out in detail by J. C. Brunet, with the substitution of the term *Belles-Lettres* for Polite Literature, are as follows:

## J. C. BRUNET'S CLASSIFICATION

(French System, 1810.)

*Outline.*

## (A) Theology.

- I. Holy scriptures.
- II. Liturgy.
- III. Councils.
- IV. The Fathers.
- V. Theologians.  
(Theology, scholastic, dogmatic, moral, catechetical, homiletic, mystical, polemical, and Christian churches and sects other than Roman.)
- VI. Singular opinions.
- VII. Judaism.
- VIII. Oriental religions.
- IX. Appendix.  
(Deists and unbelievers.)

## (B) Jurisprudence.

- (a) Introduction.  
(History, study, philosophy, dictionaries, general treatises.)
- I. National and international.
- II. Political.

III. Civil and criminal.

IV. Ecclesiastical or canon law.

(C) Sciences and arts.

I. Philosophical sciences.

II. Physical and chemical sciences.

III. Natural sciences.

IV. Medical sciences.

V. Mathematical sciences.

VI. Appendix to the sciences.

(Occult philosophy, alchemy and astrology.)

VII. Arts.

VIII. Mechanical arts and crafts.

IX. Gymnastics.

X. Games, sport.

(D) Belles-Lettres.

I. Linguistics.

II. Rhetoric.

III. Poetry.

IV. Poetry, dramatic.

V. Prose fiction.

VI. Philology.

VII. Letters.

VIII. Polygraphs.

IX. Collections and extracts.

(E) History.

I. Historical prolegomena.

(Philosophy, study, historical atlases, dictionaries, geography and travel, chronology.)

II. Universal History.

III. History of religions and superstitions.

IV. Ancient History.

V. Modern History.

VI. Historical paralipomena.

(Chivalry, public ceremonies, archæology, literary history, biography, bibliography.)

VII. Miscellanies, encyclopædias.

VIII. Journals, literary, scientific, and political.

We see here a new order more closely adjusted to the needs of the bibliographer. Bacon carefully excludes the classification of Theology from his scheme—his is one of Human, and not of Divine, Learning. The scheme of Brunet is for written matter as a whole. We have no evidence that Bacon ever intended a bibliographical application of his scheme, and it would be better to regard it as a chart of learning rather than as a practical classification. Brunet is purely bibliographical. His system commences, as most modern schemes have done, with Theology. Curiously enough it seems not to provide a place for Sociology, except in regard to man as a subject to human law in Jurisprudence. It is a purely artificial scheme; the order is not natural, or evolutionary, but is arbitrary. This is clear in the division Sciences and Arts, which mixes up the pure and applied sciences. In Belles-Lettres, answering here to our modern Language and Literature, we have Linguistics widely separated from Philology; in History we have Religions and Superstitions, which would seem to be more clearly allied to Theology.

68. We shall refrain from dealing with the successive schemes proposed from the time of Brunet onwards; because, though interesting, they present few outstanding philosophical or practical features, and they are summarised briefly in Brown's *Library Classification*. The scheme of the British Museum, 1836–8, which is sufficiently

detailed for our purpose on page 33 of that work, is worthy of consideration as the system upon which our largest library is arranged. It will be noted that the scheme reflects the old connotations of many of the terms used as names of the main classes; and in many respects from our modern standpoint it contains a number of examples of what to avoid in classification. It commences, as Dr. Garnett affirmed that all schemes should commence—rather unconvincingly we think—with Theology, and in this class no places are allocated to religions other than Christian, except 182, Scriptures of Non-Christian religions. This may be overcome by mixing Christian and Non-Christian theologies indiscriminately, but that method is radically unsound. Jurisprudence is clear enough in its arrangement, but it is separated, as in the French scheme, by a long interval from the cognate philosophy of Economics, which appears under Philosophy. Natural History and Medicine is a logically sound class, but the sandwiching of Horticulture (a possible fine art) and Agriculture (a distinct branch of useful art) between Botany and Mineralogy, although it can be defended theoretically, is a doubtful arrangement when regarded from the practical point of view. Archæology and the Arts is an unwieldy class involving several differences from modern systems. Archæology is considered nowadays by many classifiers to be part of the raw material of History, and Postage Stamps to have



some close relation to Currency, and, consequently, to Economics. It is noticeable that Music is a *transitive* or "carrying-over" class between the Fine Arts (Sculpture) and the Recreative Arts (Field Sports), as it partakes of the nature of both fine and recreative art. A similar arrangement is observable in Cutter. The appearance of Useful Arts as a division of this class is another example of theory triumphing over practical considerations; the arrangement is absurdly inadequate, seeing that this class embraces nearly all the trades and handicrafts of man. Philosophy has largely the Baconian connotation, and embraces Civil Philosophy (Economics, Education, Sociology), Mental Philosophy (Philosophy, Logic, Occult Science), Natural Philosophy (Arithmetic, Mechanics, etc.), and probably Chemistry and Photography are regarded as branches of Natural Philosophy. The arrangement is utterly antiquated, and would not be tolerated in any progressive library. Belles-Lettres is the comprehensive name for Literature and the Book Arts—the great form classes of the scheme. It includes one trade, Typography; but otherwise manages to embrace all the divisions of pure literature and to fulfil the functions of a generalia class. As we have indicated, this most interesting scheme is a survival on gigantic lines of the classification theories of Bacon and Brunet; it reflects the older scholarship. From the point of view of the librarian of a popular library it is pedantic and involved; it recognises an

arbitrary intellectual division of the field of knowledge and has small regard for the natural affinities of the various parts of knowledge. It has been found adequate, however, by the librarians of the British Museum, and that fact introduces a reflection of some consequence in classification.

69. "It does not matter in a bibliographical scheme where a topic is located so long as the place is constant, the arrangement there consistent, and so long as the classification is properly indexed." This is an axiom of classification having wide currency, and, from the mere finding point of view, an incontestable one. But it transgresses nearly every canon of classification, and has a fatal defect. The function of classification is to place a topic in its sequence in the order of knowledge in such a manner that books leading up to the topic are on the left of those dealing with it, and books leading away from the topic are on the right of them. Admit this—and it is only wise to expect a classification to bring near to a topic all its cognates and correlatives—and the axiom propounded above is susceptible to criticism. However, the axiom propounds a practical truth, and the student will be wise to think it out. This statement, then, is held to be the practical reply to those who find the sequence of the British Museum scheme theoretically unsound.

70. A rapid glance at the scheme of Edward Edwards, 1859, which is set out on page 40 of

Brown's *Library Classification*, must complete our survey of the prominent historical schemes of book classification. Here the order is adjusted to the requirements of public libraries. We shall leave the student to apply to this scheme the methods of criticism we have used in section 49. The omission will be noticed here, as in the British Museum scheme, of any provision for Non-Christian religions (perhaps Edwards thought public libraries would be immaculately orthodox); that History is worked out with some fullness, but that only one division is given to Modern Africa and Asia, and that biography is divided subjectively throughout the classification; that Politics and Commerce are given their proper emphasis and not made divisions of Philosophy; and that the Sciences and Arts make a somewhat unwieldy class, but one much more reasonably arranged than that of the British Museum. It will be well to pursue a similar method of criticism with each scheme to be found in chapter 3 of the textbook we are using; but it is essential that the schemes we have mentioned should be so treated.

71. READINGS.—We are conscious that the reader is expected to cover a great deal of ground in the foregoing chapter, but our space does not admit of more leisurely detail. The chapter contains what are probably the best schedules available in English of Bacon and Brunet, and reference may, so far as these schemes are concerned, be confined to these

schedules, except that we hope the student will read Bacon's own account in *The Advancement of Learning*. Other readings :

BROWN. *Library Classification*, chapters ii and iii.

RICHARDSON. *Classification* (the bibliography deserves the closest study).

ROUYEYRE. *Connaissances Necessaires à un Bibliophile*, vol. ix.

EDWARDS. *Memoirs of Libraries*, vol. ii, pages 761-831.

FLINT. *History of the Classifications of the Sciences*.

## 72. QUESTIONS.

(1) Write a brief account of the Baconian Classification, explaining its purpose. How does it differ from modern schemes ?

(2) Apply a pure alphabetic notation to the Bacon scheme. Explain its use.

(3) Apply a decimal notation to Brunet's scheme ; explain the scheme, and the use of your notation.

(4) What are the virtues and defects of the British Museum scheme ?

(5) Criticise the axiom that it does not matter where in a scheme a topic appears so long as it is indexed.

(6) Write a brief essay on Class 300 of Dewey, and contrast it with Class D of Edward Edwards's scheme.

## CHAPTER IX

### DECIMAL CLASSIFICATION

73. CLASSIFICATION schemes are described as "movable" and "fixed"; or, to use other names to express the same things, "relative" and "rigid." Nearly all modern schemes are of the "movable" or "relative" variety. The fixed or rigid scheme is one that does not permit of the intercalation of divisions or even books in its sequence, and is subversive of all the ideas we have expressed in the course of these chapters. Usually in such a scheme the books are originally divided into a number of main classes, are arranged with some regard to subject, and spaces are left for additions; but when these spaces are exhausted additions are put at the end of the class or somewhere else in the library where space can be found. In effect, then, classification and fixed location are practically incompatible, as a proper scheme must allow books to be "moved up" whenever additions are made. The relative system numbers not the shelves, but the books; when a book is added it takes its appropriate class-number, is inserted, and the books following it are moved sufficiently to make room for it. Thus,

as long as shelf space remains in the library the books can run in one continuous subject sequence. The methods of arranging books by accession numbers, irrespective of their subjects—a method which, to the disgrace of librarianship; is still occasionally to be found—or by size, or by any accidental characteristic, are usually examples of rigid location.

74. By Decimal Classification we mean a scheme which has been adjusted to admit of the application of a decimal notation. In its perfection such a scheme can only admit of ten main classes, as the digits 0 to 9 are the full extent of the base ; but the flexibility of decimal division might readily be applied to schemes which reject this limited base. For example, if we are content with an impure notation, we might use letters for our basal notation and *divide* decimally ; hence, if the ten main classes of Dewey were lettered A to J instead of 0-9, and the present decimal method of division were carried out, it would be possible to combine nearly all the virtues of the Expansive notation with the very distinct merits of the Decimal. But we must not stay to theorise on this point beyond pointing out that the decimal method of division has an enormous flexibility and may be applied in many ways not yet observed by classifiers.

75. It is not strange that classifiers should long ago have recognised the wonderful adaptability of decimal figures to classification, and the superiority of the method to the rigid arithmetical notation. In more

than one large library, as Brown suggests, a system of decimal character was introduced ; at the Mitchell Library, Glasgow, for instance ; and we find in 1856 a treatise appearing from the pen of Nathaniel B. Shurtleff, at Boston, U.S.A., entitled *A Decimal System for the Arrangement and Administration of Libraries*. This privately printed work describes a scheme in which the library is to be arranged in alcoves, each alcove is to contain ten tiers, and each tier ten shelves. Here we have in essence the outline of the Decimal scheme as we know it to-day. But the notation was hardly the expansible instrument of the present. The books had a fixed place on the shelves ; hence  $\frac{19}{120}$  would mean the nineteenth book on the bottom shelf of the second tier. Note that the tiers were numbered 1-10 rather than 0-9, an arrangement which lacks the simplicity of the method which has superseded it. What happens when any shelf is full we are not told. An interesting decimal scheme, and of importance owing to the character of the library to which it is applied, is that of the Bodleian Library, 1888, the tables of which are not published in an expanded form, but which admits of very great expansion. The notation begins at 90 and ends at 399, and these numbers are distributed through the main classes as follows :

90-99	Natural, comparative, and heathen religion and folk lore.
100-149	Theology.
150-169	Medicine.
170-179	Arts and trades.



180-199	Natural science.
200-209	Travel.
210-229	Biography, heraldry and history.
230-248	Sociology.
250-299	Literature (including bibliography).
301-329	Language.
340-399	Miscellaneous.

These classes present no theoretical perfection in their order, and it will be noted are more suitable to a large academic library than to a general library of small size. The classes are divided decimally, after the manner of Dewey, and the arrangement of each specific subject is approximately chronological. The following are a few random examples illustrating the intercalation of topics :

257	Writing and illumination : general.
2571	Particular scripts.
25782	Specimens of autographs.
25783	Catalogues of autographs.
25784	Handwriting as an index to character.
25785	Shorthand.
25789	Cypher.
257899	Punctuation.

The most recent general decimal classification is that of Princeton University, 1901, outlined by Richardson. It has an enormous four-figure base divided decimally, and the main classes run as follows :

0000-0999	General Works.
1000-1999	Historical sciences.
2000-2999	Language and literature.
3000-3999	Modern language and literature.
4000-4999	Arts.
5000-5999	Theology.
6000-6999	Philosophy and Education.

7000-7999	Sociology.
8000-8999	Natural sciences.
9000-9999	Technology.

It realises the needs of a collegiate rather than those of a general library ; it has many mnemonic features, and great flexibility ; but its notation is somewhat lengthy : *The Zend-Avesta* ; *tr. Darmesteter*, 1898, for example, being marked 2429·2898.

76. When, however, we speak of decimal classification, we usually think only of the *Decimal Classification and Relative Index for Libraries, Clippings, Notes, etc.*, by Melvil Dewey, first published in 1876 with twelve pages of tables and an index, and reaching in its latest revisions many hundreds of pages of tables and indexes. This system, which is our principal consideration here, has admitted faults both theoretical and practical, but until quite recently, there has never been so valuable a library tool, so important a work in systematising and co-ordinating the chaos of arrangement which hitherto existed in many libraries. It appeared long before the canons by which we now judge it were formulated, and it may appear to disadvantage in their light ; but we must recognise that this system has a practical utility, a hospitality and a simplicity which had never before been equalled, and probably will never be surpassed. The basis of the scheme, as we showed in section 24, is ten main classes :

- 0 General Works.
- 1 Philosophy.
- 2 Religion.

- 3 Sociology.
- 4 Philology.
- 5 Science.
- 6 Useful Arts.
- 7 Fine and Recreative Arts.
- 8 Literature.
- 9 History.

A few ingenious theorists have imagined that they saw a distinct order in this of evolutionary character, and argue thus : In man's earliest appearance the first difference between him and the animal was mind (which is the fundamental of 1 Philosophy); his mind developing, he sought his origin and deduced a Deity (which is fundamental of 2 Religion) ; he then established himself in communities (and man in communities is the matter of 3 Sociology) ; for communal purposes he required and formulated language (4 Philology) ; to protect himself he then gathered what knowledge he might of his environment (5 Science) ; and, as he could not live save by the exercise of industries, he developed these (6 Useful Arts) ; as he progressed to a higher rationality he sought to gratify his finer instincts by the ornamental and beautiful (7 Fine Arts, and 8 Literature, i.e. the fine art of writing) ; and, finally, recorded his development (9 History). Candidly, this is weaving cobwebs to confound the ignorant, and perhaps to amuse the enlightened ; but the theory is worth statement, in that it shows what is rapidly becoming the " unpopular " opinion. Using theory with a more practical intention, we see that

Sociology (man in communities) is removed from History (the story of man in communities) ; historical sociology is of course the raw material of history. Again Philology (the principles of Language) is removed from Literature (the application of language to the expression of thought). Then, from the entirely practical standpoint, many of the main classes are cumbrous. Fiction is included in Literature ; Biography is merely one division of History, and Geography and Travel is another in the same class. But before we develop our criticism and suggest adjustments, we must have a clear view of the scheme and what it is meant to achieve. It is scarcely fair to criticise a classification for failing to accomplish purposes for which it was never intended.

77. Ten main classes are the basis of the scheme ; these are noted by the digits 0 to 9. Its first expansion is ten divisions added to each of these classes ; hence 01-99, which gives 100 places by the addition of one figure ; its second by the addition of ten more to each of the 100 places ; hence 010-999, which give 1000 places. The division is then carried on by the addition of figures read decimally, as required ; a decimal point being placed after the third figure to break up the symbol so that it may be read more easily. The extent of this division is unlimited, but as it proceeds in multiples of 10, five figures give 100,000 places and usually meet the requirements of a large library. It is curious to note

that when the first arrangement of only 1000 places appeared it was criticised as too elaborate even for a large library. It was intended by the designer to combine, as far as possible, the theoretical order of philosophical classification with distinct practical utility. "Practical utility and economy are the keynotes of the entire system, and no theoretical refinement has been allowed to modify the scheme, if it would detract from its usefulness or add to its cost." Such an ideal limits our criticism, and anticipates the objection some critics have made that knowledge does not naturally, or even conveniently, split into ten divisions. However, we have shown that the main classes may claim a sort of general sequence. When we come to examine the tables we are faced with the fact that the last subdivision of any main class, a very specific head as a rule, cannot be said to modulate into the next main class, a criticism which is inevitable in every scheme known to us. And, in fact, we become aware that the Dewey system is in reality a series of special classifications, each having an essential characteristic as the base of its arrangement, and intended within itself to be in its terms exhaustive, mutually exclusive, and so on. An examination of these schedules, especially those of Science, shows that an attempt has been made to approximate to the order laid down by the scientist. It can scarcely be said to be evolutionary, although it has an evolutionary tendency. Such sections as Philosophy, which is

arbitrarily and badly arranged, Religion, Sociology, etc., follow no arrangement that can be called historical ; in Philosophy cognate heads are separated in a rather bewildering manner. All this criticism, which it is desirable that the student should extend for himself, is, as we have shown, anticipated by Dewey's disclaiming of absolute theoretical perfection, and by his assertion that it matters relatively little where in a scheme a subject is placed, if the scheme is thoroughly indexed. A cumulative relative index of all the schemes is given, in which the main class by which any topic is embraced is marked in a distinctive type.

78. We have already indicated that Fiction is included in Literature, and even there separated into nationalities ; and Biography and Geography and Travel are merely divisions of History. Various adjustments have been made by librarians. Fiction is usually withdrawn from 800 and arranged alphabetically by the names of authors and marked F, or with some other distinctive symbol. Similarly Biography is arranged in a separate sequence, marked B, and arranged by the name of the biographee. And two alternative adjustments have been suggested for Geography and Travel. One is to ignore section 910 and its subdivisions and to put books on Geography and Travel at the History numbers, merely adding some mark so that the two kinds of books may have separate sequences under the numbers. Another is to remove the class from



900, to substitute a T for the 9, and with this substitution to use the same notation as for history. Other adjustments may be made, but such should only be made after careful thought. As might be expected, the classification is inadequate in many of its details. We instance only one or two, and leave the student to discover other examples. In 700, the arrangement of Photography is obsolete and does not allow for modern processes ; outdoor sports are not worked out, and there is now a large literature upon them. In other classes various omissions are evident. There is no place, for example, in 900 for the United Kingdom or for the British Empire, which must be placed rather awkwardly at 942. Some objection may be found to the arrangement of the subdivisions of Literature, which are chronological, and in a large library difficult to follow by the reader who does not know the dates of the author required. Another and much graver fault is exemplified in 133, where Astrology, Palmistry, and other reputable sciences (at least some people think them so) are labelled Delusions. This is *criticism*, not classification, and it is a rule of bibliographical classification that heads which are critical are to be avoided. One other fault the British librarian sees in the scheme is the emphasis on American topics. The nonentities of American literature and history are worked out with a surprising fullness. American literature, for instance, precedes British, a difficult order to justify



when the small area and comparative insignificance of American literature is remembered. And, as we have just said, such great subjects as the United Kingdom and the British Empire seem to have escaped Dewey's view entirely.

76. Thus, briefly, we have commented upon the Dewey system. Its notation is ideally flexible, is pure, is not unduly long. It is capable of many manipulations; as in the Subject scheme, for example, nearly every part may be qualified by another. The year 1895 saw a development of considerable importance in the history of classification and of decimal classification in particular. In that year MM. La Fontaine and Otlet, who for six years had devoted themselves to the classification of works on Sociology, initiated what was called the first International Conference of Librarians at Brussels. This Conference eventuated in the formation of a Bureau at Brussels now known as the International Institute of Bibliography, which had for its objects the perfecting of all methods of recording scientifically the literature of the world. It publishes a *Bulletin de Bibliographie* monthly. This Bureau, which has now developed enormously and is one of the most important bibliographical institutions in the world, indexes on cards—which it reprints and publishes to subscribers—all bibliographies irrespective of language and country. Clearly for this herculean task a very minute classification was needed. The International Conference laid down

the statement that "the results of the Decimal system of classification are fully satisfactory, not only from a general practical point of view but also for purposes of international co-operation." The Dewey Decimal scheme was accordingly adopted. It must be realised that the scheme required was one for application not to books but to an enormous analytical index or catalogue. Hence a scheme much more minute than the existing Dewey was required; and the Institute, instead of creating a new scheme, took the main classes and divisions of this scheme and slightly modified and enormously extended them. Some sections—Chemistry, for example—are increased and expanded a hundred-fold by the simple process of intercalation. This naturally means a corresponding expansion of the notation, and to prevent the necessity of inordinately long symbols a series of relation marks were designed, a brief résumé of which was given in section 51. These include Dewey's *form* divisions 09, which are written in parenthesis (09) and have the same meaning as in Dewey's tables; *geographical* divisions 3-9, which are the divisions of History with the suppression of the 9; hence (40) is Europe, (44) is France; a *language* mark written after = and following the form of Dewey's subdivisions in 400 and 800; hence =2 is English, =4 is French; a *date* mark which is merely the year inscribed between inverted commas: hence "1896" is the year 1896; but it if is only desired to mark the century "14" suffices

for the fourteenth century, and "155" for the period 1550 to 1560, if it is desired to show decades ; the *point of view* mark, ...01, ...00·2, which shows the object, method, and so on, of the work classified ; and the *relation* mark, :, which relates one topic to another. Thus a mark, broken in form—that is to say any impure one, using several types of symbol—may be constructed from these signs with great economy. At the same time, enormous flexibility is attained by the notation. We have refrained from a long explanation of these marks, as they have been thoroughly explained by Mr. H. V. Hopwood in his paper "Dewey Expanded" (*Library Association Record*, vol. ix, pages 307–22, 1907), and a description of the whole activity of the Institute may be read with many tables and examples, in the *Manuel Abrégé du Répertoire Bibliographique Universel*, published by the Institute.

77. A very special scheme of classification, with a decimal basis and method of division, is *A Classification of Library Economy and Office Papers*, by L. Stanley Jast, 1907. This is a scheme for the arranging of all books, and other printed and written records, of librarianship, as well as a tabulation of the actual materials of library economy. It can be easily applied to correspondence and to similar matters ; and its application can be illustrated simply. Correspondence is arranged loose in folders, which are marked with the division numbers, each item is marked with the classification number on its

top left-hand corner, and the arrangement within any given number is chronological. The system is best applied to what is known as the vertical system of filing. Its application to this and to books is exactly the same in method as the application of Dewey. The main classes are as follows :

- 0 General.
- 01 Librarian. Personal.
- 1 Legislation. Founding. Classes of Libraries.
- 2 Extension Work.
- 3 Building.
- 4 Government and Service.
- 5 Executive.
- 6 Accession. Description. Conservation.
- 7 Departments.
- 8 Publications.
- 9 Other.

The method of subdivision may be illustrated by one example :

- 7 Departments.
- 71 Lending Library.
- 713 Return,
- 7135 Overdues.
- 7138 Defaulters
- 71385 Reported to Town Clerk.

It will be noticed that the decimal point is dispensed with, and we may add that the point is not an essential part of a decimal notation as many seem to think. The system is equipped with a relative index.

#### 78. READINGS.

BROWN. *Library Classification*, chapter iv.

RICHARDSON. *Classification*, pages 113-17, 132-6.

DEWEY. *Decimal Classification*. Whole of Introduction.

HOPWOOD. "Dewey Expanded," *Library Association Record*, vol. ix, pages 307-22, 1907.

CAMPBELL. "L'Institut International de Bibliographie," *The Library* (old series), vol. vii, pages 340-6, 1895.

INSTITUT INTERNATIONAL DE BIBLIOGRAPHIE. *Manuel Abrégé du Répertoire Universel*, Brussels.

(Not essential; much of the ground is covered by the two foregoing papers, but a valuable textbook.)

JAST. *Classification of Library Economy and Office Papers*.

SAYERS. *Canons of Classification*, chapter v.

For other elementary descriptions of the Dewey scheme, see BOSTWICK, *The American Library*, chapter xii; DANA, *Library Primer*, chapter xxi; and almost every other general textbook on library economy. There is also a large periodical literature upon it, both American and English.

## 79. QUESTIONS.

(1) What are the principal advantages and disadvantages of Decimal classification?

(2) Write a history of the Dewey classification, and state if you can trace any relation between it and the Baconian scheme.

(3) Classify by Dewey the following:

Tyrrell's *Christianity at the Cross Roads* (Modernism).

Smith's *Moral Evil of Over-Eating*.

Jones's *Astigmatism: its Cause and Correction*.

Darwall's *Atavistic Tendencies in the Domestic Animals*.

Heinze's *Bibliography of Aesthetics*.

Defoe's *History of the Great Plague*.

Masson's *Around St. Helena*.

Hudson's *Nature in Downland*.

Sweet's *Use of Phonetics in English*.

(4) Justify Dewey's assertion that "no theoretical refinement has been allowed to modify the scheme, if it would detract from its usefulness or add to its cost."

(5) Classify by Dewey and add the Institut International relation marks to the following :

*Journal de Chimie* (Chemistry) (French), 1585.

*Bibliography of Solar Physics* (English), 1876.

*Outlines of German Jurisprudence as compared with those of English Common Law* (English), 1904.

*Poole's Index to American Periodicals*, 1908.

(6) Describe the uses of a classification of library economy.

## CHAPTER X

### THE EXPANSIVE AND SUBJECT SYSTEMS. THE CLASSIFIED CATALOGUE

80. It will be noticed that all the schemes we have dealt with, from that of Brunet to the present, have inverted the order of the Baconian classification. Whereas Bacon's chart of knowledge commences with human memory, or History, and proceeds gradually backwards through imagination to reason and speculation, or Philosophy, the later schemes proceed in exactly the reverse order, commencing with reason, Philosophy, and Religion—which are emanations of the same human faculties—and proceeding through the various human faculties to that of historic consciousness or History. This, then, is the explanation of the statement in section 64, that "right down to modern times nearly every scheme has been an inversion, perversion, or adjustment" of the scheme of Bacon. The reversal of the order was the reason why Edward Edwards called such schemes "inverted Baconian"—a term which has been used in many textbooks without an explanation of its meaning.

81. Of the inverted order is the Expansive Classi-



fication of Charles Amni Cutter, which appeared in 1891, and is perhaps the most scholarly of all schemes that have been designed hitherto for application to a modern library. It appeared first as *Expansive Classification : Part 1 : The First Six Classifications*, and was published by the author at Boston, U.S.A. The name "expansive" is explained by the fact that the classification consists of separate sets of tables, each covering the whole field of knowledge ; the first is very broad, and suitable only for application to quite small collections of books ; the second is subdivided at somewhat greater length ; the third at still greater length, and so each scheme progresses in fullness. It is possible, with certain minor adjustments, to apply the earlier schemes while the library is in its infancy, and to expand to the later schemes with the growth of the collection. This is not to be accepted without reservation so far as the notation is concerned, as the first scheme is :

- A Works of reference and works of a general character.
- B Philosophy and Religion.
- E Historical Sciences.
- H Social Sciences.
- L Sciences and Arts, both Useful and Fine.
- X Language.
- Y Literature.
- YF Fiction.

which becomes in the Sixth Scheme :

- A General Works.
- B Philosophy.
- Br Religion.
- C Christianity.

D	Historical Sciences.
E	Biography.
F	History.
G	Geography and Travels.
H	Social Sciences.
I	Demotics, Sociology.
J	Civics.
K	Legislation.
L	Sciences and Arts.
M	History.
N	Botany.
O	Zoology.
R	Useful Arts, Technology.
S	Constructive Arts.
T	Fabricative Arts.
U	Art of War.
V	Athletic and Recreative Arts.
Vv	Fine Arts. Music.
W	Fine Arts.
X	Arts of Communication by Language.

The expansion of the classes is clear ; but it will be seen that, in practical application, if too early a scheme had been adopted in the first place, in the expansion

has become

E	Historical Sciences.
D	Historical Sciences.
E	Biography.
F	History.
G	Geography and Travels.

and such a development could only be made on the shelves by re-marking the whole of the class involved and its divisions. Consequently, although the classification schedules expand one into the other, the notation does not, and in adopting the scheme at the outset the author's injunction : " Be

minute, be minute, be not too minute," may well be pondered.

82. Both in the order of the main classes, and in the order of the schedules, the scheme is evolutionary, "in natural history putting the parts of each subject in the order which that theory assigns to their appearance in creation. Its science proceeds from the molecular to the molar, from number and space, through matter and force to matter and life ; its botany going up from cryptogams to phanerogams ; its zoology from the protozoa to the primates, ending with anthropology," and so on through the various divisions of knowledge.

83. The notation is, generally speaking, a pure alphabetical one ; the letters of the alphabet marking the main classes. But there are not twenty-six main classes ; strictly, there are only ten, as in the Dewey scheme, and these are marked as follows :

A	General Works.
B	Philosophy.
Br	Religion.
D	Historical Sciences.
H	Social Sciences.
L	Sciences and Arts.
R	Useful Arts, Technology.
V	Athletic and Recreative Arts.
Vv	Fine Arts. Music.
X	Arts of Communication by Language.

The intervening letters are given to the more important divisions. The method of subdivision, as already explained in section 48, is by the addition of letters ; thus, every main class may be divided by

twenty-six letters of the alphabet, if intercalation is necessary to this extent, and every division by another twenty-six, and the process may be continued as far as desirable.

84. The Form Divisions in the Expansive system resemble Dewey's, and have a numerical notation which is invariable and may be applied to any heading. These are :

- 1 Theory of the subject.
- 2 Bibliography of the subject.
- 3 Biography of the subject.
- 4 History.
- 5 Dictionaries.
- 6 Handbooks, etc.
- 7 Periodicals.
- 8 Societies.
- 9 Collections.

Numbers are also used in the Local List, which is an important part of the scheme. Classes F, History, and G, Geography, are subdivided by a decimal number, each in practically the same way. Thus, instead of subdividing by the addition of letters, as in the other classes, these classes are minutely divided by figures. F without a figure is Universal History ; F 01 to F 07 deal with the *periods* of Universal History, and F 11 to F 99 with Particular Countries. These numbers have an invariable meaning in both History and Geography ; thus :

F45	History of England	G45	Geography of England
F451	History of British period.	G451	Geography of British period.
F452	History of Norman period.	G452	Geography of Norman period.

and so on. These local numbers may be applied to any part of the system ; thus :

Camping Out in England VDA45 ;

i.e. V, Fine and Recreative Arts ; VD, Outdoor Sports ; VDA, Camping out ; 45, England (geographical number). Or, if we desired to arrange it as a feature of *England* the number might be reversed but should be preceded by the class letter, as G45VDA. This Local List has, therefore, the mnemonic value which belongs to a number which may be applied anywhere in a scheme with an invariable meaning.

85. A Seventh Expansion of the scheme was in progress when Cutter died, and some parts had been issued. The work is being continued by experts under the general editorship of his son, C. P. Cutter, and is not yet completed. The first Six schemes are equipped with a relative index ; the Seventh has a relative index to each main class, and presents the appearance of a series of very minute special classifications. It is intended to publish a cumulative index of the whole Seventh expansion when the work is completed. Briefly, the Cutter classification, while it does not present the simplicity of notation nor the immediate practical convenience of Dewey's, is far more perfect as a classification ; it is abreast of modern knowledge ; is equipped with minute directions, and is altogether a most valuable and erudite work.

86. The last of the predominating schemes of bibliographical classification, and one already established in favour in several British libraries is the *Subject Classification : with Tables, Indexes, etc., for the Subdivision of Subjects*, by James Duff Brown, 1906. It is the highest achievement in England of the classificatory art as applied to books, and although it has not the claim to scholarship that Cutter has, it is simple, expansible, and complete. It has been treated so fully in English library periodicals by Messrs. Savage, Coutts, and Lyster, and by the present writer, that it is unnecessary here to give more than a brief account of its outstanding features. Although the author makes no claim for the evolutionary order, the characteristics, Matter and Force, Life, Mind, and Record, upon which the main divisions are based, are evidently meant to represent the order of the appearance of things in time—which is a form of evolutionary order. (See section 31.) The usual form class, Generalia, opens the scheme, but it differs from the equivalent class in other schemes in that it includes Logic, Mathematics, and the Plastic Arts, on the very controversial ground that they are pervasive of all other classes of knowledge. In the remaining classes the order is based on the belief that every art springs from some definite source, or that every effect has a discernible cause, and the arrangement is from source to application, from cause to effect. Thus, Sound leads up to Music, Light to Optics,

and so on. This results in some curious anomalies, as discussed in chapter iii of *Canons of Classification*. Certain divisions are worked out with great minuteness, especially Music, and the divisions of History and Geography.

87. The notation is of the mixed variety, consisting of a single letter, to mark, in general but not always, the main classes. Division is obtained by figures, 000-999 being (approximately) allocated to each division. These figures are of ordinary arithmetical interpretation, and vacancies are left for new topics; but if desirable they may be used decimally. This is a great advantage. The Form Classes are to be found in Generalia and Record. The Form Divisions are obtained by a process peculiar to the scheme called the categorical tables. These are of numbers, with an invariable meaning, which are added after a decimal point to any part of the notation.

88. The Index is a specific one, giving only one place for each topic. This has already been discussed at sufficient length in section 42. The scheme is preceded by a very good introduction, which, although defective on theoretical matters, a point the student is now in a position to judge, is valuable as a practical, experienced manual of shelf-placing, and contains many manipulations of notations, some of which have almost the value of annotation.

89. The most recent purely bibliographical development of classification is its application to Fiction.



This has been accomplished with more or less success in Zella Allen Dixson's *Comprehensive Subject Index to Universal Prose Fiction*. New York : Dodd, 1897. It is believed that a subject arrangement of fiction would tend to reinforce other subjects, and it is true, for example, that the ideas of history held by most people are derived from fiction. Nothing, in our opinion, can justify the arrangement of fiction in the other classes in a general library ; but there is no rule to forbid it. In the catalogue it may be very desirable to add entries of illustrative fiction. Thus Phillpotts's *The River* may be classed under fiction and also under Dartmoor, as it is a very useful topographical work. Trivial references of this character should not be made, as they serve no useful purpose and may be irritating to readers.

90. The catalogue was the parent of classification, and the classified catalogue is now coming into wide favour amongst librarians. It has the signal advantage over the alphabetical catalogue—which we have no intention of criticising here—in that it may be published a class at a time, and the expense and labour involved be spread over several years (that is, of course, if a printed catalogue is issued). The objections to the classified catalogues have been based upon the rather imperfect examples put forth by some libraries. A series of entries arranged by a given scheme is invaluable to the student who has thoroughly mastered the classification, but few students are willing to spare time for this, and it is

necessary to equip a catalogue with indexes. An ideal classified catalogue would be arranged first in the exact order of the classification chosen. A good deal of confusion would be avoided if this were realised. A great deal has recently been written about the *Subject Catalogue of the London Library* as though it were a classified catalogue. It is not ; it is merely a very fine alphabetical list of subjects ; consequently, if one looks up Switzerland under S, one is referred also to the Alps under A, and to various other places. A classified catalogue would bring these correlative subjects into proximity, not scatter them at opposite ends of an alphabet. It must have also an author-index, so that anyone knowing an author but not certain of the subject of the book may be referred. Such an index, if well done, would be of author and brief title ; i.e. :

Fletcher, C. R. L. History of England. **942.**

but where economy is needed the author's name, *and initials*, are made to suffice. A subject-index is also necessary ; i.e. :

Socialism : political econ. **335.**

The whole catalogue should be prefaced by a table of the classification, showing the subdivisions employed in the catalogue. These are the minimum requirements of a classified catalogue ; a full one would have, in addition, a title-index, which might be amalgamated into one alphabet with the author-index, by the simple process, in most cases, of in-

verting the author-index entries. We have already discussed the differences between classification on the shelves and in the catalogue in section 33. The methods of compiling the classified catalogue belong rather to the subject of cataloguing than to classification, but we may say that it should be in the strict numerical order of classification, be fully analytical, and the class-marks should be in bold type. Usually the class-mark is printed at the end of the entry as :

**370** EDUCATION.

Fitch. Lectures on Teaching. **371.**

but very often the class-mark is printed in front of the author's name, i.e. :

**370** EDUCATION.

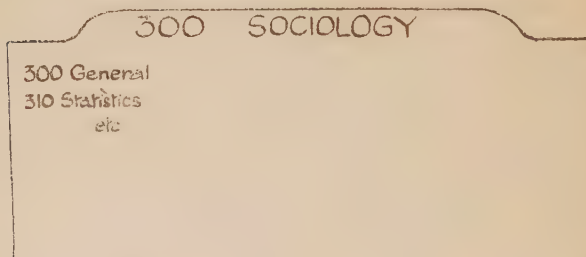
**371.** Fitch. Lectures on Teaching.

The entries in card and sheaf catalogues are usually presented thus :

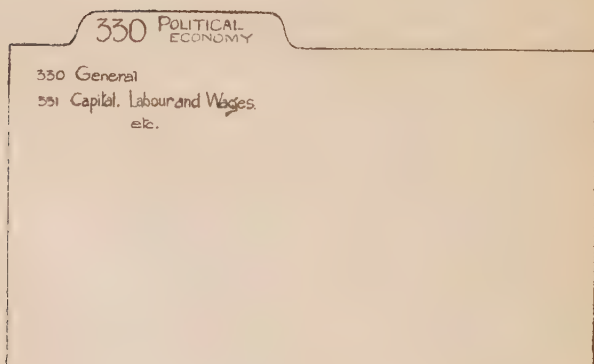
370	FITCH	
		Lectures on Teaching.

*Figure 1, Card catalogue entry.*

The main classes and divisions of the card catalogue are shown on guide cards, main classes requiring unit cards (Figure 2), divisions a guide with a tag half the breadth (Figure 3)



*Figure 2, Main class guide card.*



*Figure 3, Divisions guide.*

and sections receive smaller guides (Figure 4).

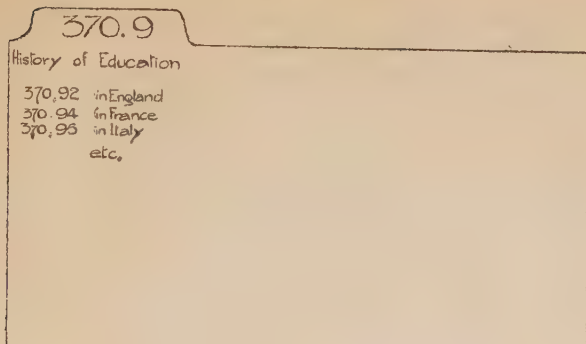


Figure 4, Sections guide.

The subdivisions of each class, division and section respectively are set out on the cards in the manner shown.

#### 91. READINGS.

CUTTER. *Expansive Classification: the first six schemes, 1891-3; seventh scheme*, Ed. W. P. Cutter.

— "Expansive Classification." In *Transactions and Proceedings of the Second International Library Conference, London, 1897*, pages 84-8.

BROWN. *Library Classification*, pages 63-8.

— *Subject Classification*, Introduction, etc.

RICHARDSON. *Classification*, pages 118-21.

DANA. *Library Primer*, chapter xxii.

SAYERS. *Canons of Classification*, chapter iv.

— AND STEWART. *The Card Catalogue*, chapter vii.

STEWART. *The Sheaf Catalogue*, chapter vii.

#### 92. QUESTIONS.

(1) Write what you can in the shape of a history and description of the Expansive scheme, and explain, with

four examples, one of which is to be a work of fiction, the application of the Local List.

(2) "The Expansive Classification is expansive in its schedules, but not in its notation." Show how far this statement is correct and how far erroneous.

(3) Compare the arrangement of Brown's A Generalia with Dewey's 000 General Works. Can the thesis that certain subjects, included in the former but not in the latter, are "pervasive," be supported?

(4) Classify the following six books by the Subject Scheme, using the Categorical Numbers where advisable:

- 1 MARSH AND DUNN. *Reinforced Concrete.*
- 2 LANG. *Homer and the Epic.*
- 3 LAWS. *History of the Non-Kymric Colony in Pembrokeshire.*
- 4 HAMPER. *Observations on Certain Ancient Pillars, called Hoar Stones.*
- 5 HARLEIAN SOCIETY. *Hampshire Allegations for Marriage Licences.*
- 6 *Contributions to the Flora and Fauna of Repton, Derbyshire.*

Explain, in addition, Brown's statement that "every science and art springs from some definite source"; and how it is applied in the Subject system.

(5) Classify twelve works of fiction according to the Dewey Decimal system, setting out clearly the subject classified in each.

(6) Assume that you are to provide a classified catalogue of 10,000 volumes, according to Dewey. Explain how far you would subdivide the subjects; explain, with examples, the main entries, and indexes you would provide. Then write a preface, addressed to the public, explaining the use of your catalogue.

## CHAPTER XI

### THE RULES AND METHODS OF PRACTICAL CLASSIFICATION

93. WE come now to consider the practical application of classification to the book and to the catalogue, "the highest function of the librarian's work," as Richardson not inaptly calls it. Certain general instructions may be laid down at the outset to govern this work, and to the consideration of these careful attention should be given.

#### *General Rules for Classifying*

(1) Classify books first according to their subjects, and then by the form in which the subjects are presented, except in generalia and in pure literature, where form is paramount.

(2) Place a book in the most specific head that will contain it.

(3) Avoid classifications which are in the nature of criticism.

(4) Consider the predominant tendency or obvious purpose of a book.

(5) When two headings clash make a decision as to which is to prevail.

(6) When a book deals with two (or three)



divisions of a subject, place it in the one which is most prominently dealt with or, if the treatment is equal, in the one which is first treated ; when with more than two (or three), place in the more general heading.

(7) Always have a reason for placing a book where you do place it.

(8) When a subject arises which has no place in the classification, consider the heading to which it seems most closely allied, and make a place for it there.

(9) Place a book where it will be most useful.

(10) Index all decisions, or new headings, which are not already included in the index to the scheme which is being used.

94. We may develop these a little, in order to explain them. Already we have made it clear that the subject of the book, where this is defined, is the characteristic by which the book is to be placed. Whatever may be the standpoint from which the book is written, or the form in which it is presented, it is or is not a book on a subject, and must be placed accordingly. Some examples have been given in earlier chapters, but there are little difficulties which can be made clearer by decisions. Adding rule 9—the rule of the most useful place—to the rule we are discussing we may consider two or three books :

- (1) " The Antiquities of Ship-Building."
- (2) " The Legal Aspects of Temperance."
- (3) " The Book-Keeping of Coal-Mining."

Such books as these demand a certain exercise of judgment ; first, what is the subject, and, secondly, is the subject the most useful place. This is usually settled for these books by the statement just made that whatever the standpoint or form the subject is the thing. It would be difficult to say to whom the antiquities of ship-making would most intimately appeal, but they would doubtless have some value to the student of marine architecture. It is fair to assume also that the legal side of temperance has more appeal to the temperance reformer than to the law student, and the book-keeping of the coal-mine is more likely to be useful to the colliery staff than to the professional accountant, although the two last statements need qualification, as we shall see later. We may crystallise thus :

- (1) The history of a subject goes with the subject.
- (2) The law of a subject goes with the subject.
- (3) The book-keeping of a subject goes with the subject.

and these decisions will be recognised as a mere affirmation of the principle already insisted upon, that, whatever the form or aspect, the subject predominates and determines the place of the book.

95. A book should be placed in the most specific head that will contain it. Cutter's rule, quoted in section 81, "Be minute," is an axiom general to classification. Clearly, if we put all books on Botany, for example, under the Dewey main division number, 580, in a large collection we get a difficult mixture of all types of botanical works. When a scheme of

classification is chosen, it should be tampered with only after the most serious consideration. Too often unwise adjustments are made ; sometimes the scheme is only used in part, as, for example, three figures of Dewey and no more. It is well to use the classification as fully as possible in a collection where expansion is in prospect. Consider, if only three figures are used in Dewey's 790, Amusements, the result is a most unhappy mixture of Boating and Ball Games in one place, of Fishing, Hunting, Mountaineering, Shooting, and so forth, in another. Here the schedules need expansion ; and in the other parts of the scheme, to restrict the application to three figures would lead to similar confusions. But it is not necessary, except in very large collections, to adopt the entire scheme, as, for example, such figures as Dewey uses for individual Scandinavian authors :

839.982.4. Gustavus Adolphus. *History*.

It is unlikely that an ordinary library will possess a sufficient number of works to make such minute marking worth while ; but a distinctive minuteness should exist throughout. This rule is allied to rule 6, which affirms that the predominating subject (or division of a subject) should determine the placing of a book. We may illustrate this from a book dealing with two periods of English history, but with one more fully than the other. It might be thought that such a book should take the general

head 942, but as the work is really, say, a contribution to Tudor history, with some account of the decline of Tudor influences in the Stuart period, it is clearly a case for placing in 942·05, with a reference in the catalogue from 942·06. Many of the rules are closely allied to these two or three cardinal principles, and it is clear from our placing of *The Legal Aspects of Temperance* at Temperance, that we were considering "the obvious purpose or predominant tendency of the work" (rule 4) and also placing the book "where it will be most useful" (rule 9).

96. The avoidance of placing books according to preconceived notions of them is an obvious necessity. We mentioned earlier that a mediæval method of classifying books was by orthodoxy or heterodoxy, a just enough division if the lines of demarcation between the two were distinctly defined. But they cannot be said to be so to-day, and the classifier must beware of placing by his own critical opinion of a book. We have heard of Campbell's *New Theology* being placed at Atheism, and at Unitarianism. No doubt the classifier thought he had grounds for the decisions, but clearly he had prejudged the book, probably in the light of his own theological convictions. A book on "Squaring the Circle" might conceivably be placed under quackery—and the average unimaginative man in the street, whose intelligence is of the halfpenny newspaper calibre, will agree with the decision—but it lacks sympathy with the remotely possible genius

who *may* achieve this impossibility. Dewey's critical placing of Astrology and Spiritism under Delusions, and with Humbugs, is the classical example of the fault we are discussing. A book should never be classified without being carefully examined; and if the point already emphasised that the subject is the thing, whatever may be the aspect of the subject chosen, is borne in mind, the avoidance of critical placings will be simple. It is essential that the classifier should be as far as humanly possible without bias.

97. There are times, however, when a decision is necessary, and these are provided for by rule 5. A book may deal with two or more headings equally. In that case, if the general heading is not the best place—the general heading will be if the subjects are all in its divisions—it is well to select for placing the book the subject mentioned in the title. If the subject is not mentioned, the subject first treated in the book should be chosen; but even this is subject to the probable use of the book; for, as rule 9 states, the supreme law of our whole study is convenience, and if our library is so constituted, say, that a book which ostensibly deals with Italy would be more accessible and valuable if placed under England, it should be placed there. All considerations of theory ought to give place to the simple inflexible law of convenience; but every care must be taken to judge of convenience. When such a decision is made a record should be kept of the place

chosen in an interleaved copy of the index of the classification, or better still on cards, in order that the classifier may always place additions at the same heading.

98. From the foregoing remarks it will be gathered that classification calls for the exercise of an average amount of common sense. Much of the difficulty in the application of existing schemes by inexperienced people, or even by experienced people unacquainted fully with the schemes, arises because the purport of a division is not fully realised. It is impossible to place books with any degree of accuracy unless the user of the scheme has a complete conspectus of it in his mind and recognises the *main* group into which the subject he is classifying falls. Many subjects are mentioned several times in Dewey, and the novice often puts a book at one of these without in the least considering whether the book articulates into the division of the class in which the name of the subject appears. Thus, we remember that Defoe's *History of the Great Plague* has been classified by more than one librarian under Therapeutics. When this cardinal principle is assimilated it will be clear that classification can never be carried out from the index of a scheme, however good the latter may be. There are, of course, many occasions where the line of demarcation between two headings is so fine as to make the choice of place arbitrary, and it is improbable that any two expert classifiers will place every book alike. This is the justification



of the often repeated assertion that classification is an art—something that demands the exercise of judgment—rather than a science—something fixed by inflexible rules excluding judgment. In essentials, however, it will be found that obedience to the rules laid down in this chapter will result in a measure of uniformity.

99. Our remarks have been directed so far to the needs of the general library. The rules apply with almost equal force to the special library, but the place chosen will be determined by the characteristic essential to the purpose of the library. A legal library will doubtless regard any book whatsoever as throwing light on particular laws; the anthropological library will treat every book as it bears upon man, and so on. But, after all, this is only another adaptation of rule 4.

100. A difficulty sometimes arises in regard to collected works. Nearly all systems provide a place for such, but it should be used with great care. An author such as Carlyle or Ruskin deals with several definite subjects, as does a series such as the Spanish Series. In these cases the sets should be split up and each volume arranged by its subject-matter. The heading Collected Works is for editions where the specific works are inextricably mingled with other works; it is a compromise due to the often quoted "physical form of books." Biography presents one or two interesting points. Many of the so-called "lives" of artists and literary men are



merely critical appraisals or other treatments of their works. In such cases they should be placed not at Biography but at Art or Literature, or at whatever subject they illustrate. All actual Biography which throws any real light on a subject, whether placed at Biography or not, should receive a reference under the subject in the classified catalogue. Again, the raw material of Biography should go with Biography, on the ground that it presents an aspect of the person biographed; for example, a book entitled *Burns Relics* would be placed with Burns's lives, and a *Collection of the Portraits of Tennyson* would arrange with Tennyson in the same way. It will be found that similar ideas prevail throughout classification, and they are only an emphasis of the point already several times repeated that "the subject is the thing," and all material of whatever kind should, if possible, be placed at the subject.

#### 101. READINGS.

JAST. "Library Classification," in Greenwood's *British Library Year Book*, 1900-1.

(As this is perhaps the most suggestive essay we have on the everyday aspects of classification care should be taken to assimilate it thoroughly.)

BROWN. *Library Classification*, chapter v.

SAYERS. *Short Course in Practical Classification*.

Revise the introductions to the Decimal and the Subject classification.

Revise Richardson's *Classification*; Lecture ii.

Various articles in the *Library Association Record*, as under, may be read with profit :

ANDERTON. "Books brought into Relation and made Operative." Vol. vii, pages 443-58, 1905.

HOPWOOD. "Reference Shelf Placing." Vol. vi, pages 241-60, 1904.

JAST. "Classification in British Public Libraries." Vol. v, pages 175-82, 1903.

## 102. QUESTIONS.

(1) State the advantages and disadvantages of breaking-up collected works and series.

(2) When is a decision necessary in classification? State what principle is involved in decisions, and show how you would record them.

(3) Explain and illustrate by examples (using the Subject Classification in so doing) the meaning of Rule 2.

(4) Draw a diagram of the drawer of a classified catalogue (Dewey) and demonstrate how you would guide it.

(5) Expand Dewey's section 793-799, in order to meet the needs of a special library of 10,000 volumes. Describe the method you adopt.

(6) Classify by the Subject and Dewey schemes, giving alternatives, if any :

i. FITZGERALD. *History of the Bradshaw Time Table.*

ii. HALDANE. *The Pathway to Reality.*

iii. EDWARDS. *Hints for Travellers Abroad.*

iv. HAEKEL. *Riddle of the Universe.*

v. A'BECKETT. *Comic Blackstone.*

## CHAPTER XII

### PRACTICAL CLASSIFICATION METHODOLOGY CONCLUSION

103. IT is necessary to observe a few practical principles in shelving books, as, however carefully applied a classification may have been, the average reader needs a number of definite finger-posts and guides to enable him to find readily the subject he wants. The ideal order of books on the shelves is the order of the classification ; from class 000 to 999 in Dewey ; from A to Z in Cutter, and similarly with all systems. It is nearly always desirable, however, to deviate from the ideal to meet the exigencies of service. Adjustments are made, too, to suit the needs of the open and the barrier library respectively. Then there is the question of the relative sizes of books. When a class is moved out of its natural sequence in the classification the result is what is called "broken order." This happens when it is desirable, in order to facilitate the service of the library, to place fiction nearest the delivery desk, or to make such adjustments of fiction and travel, or any other class as were commented upon in

section 78. In the indicator or other barrier library it is very desirable to have the most frequently used books near the point of service ; in the open access library it is desirable to run the fiction round the walls of the room or to distribute it in some simple but widely spread manner, in order to avoid congestion of traffic at any point. Broken order should only be resorted to when some definite gain arises from it, as the advantages of a strict sequence of classes are very great.

104. It must be clear that books of varying sizes present a difficulty to the classifier, and former librarians, with more regard for neatness than practical requirements, dispensed with classification by subject and generally arranged all the octavos together, all the quartos together, and so on. No doubt a measure of solidity and tidiness resulted ; but the modern librarian who wishes to maintain a strict classification sequence often finds a duodecimo side by side with a folio. To range such books together would not only mean a large waste of vertical space on the shelves, but would also be highly inconvenient owing to the tendency of small books to hide themselves between larger ones. The solution lies in what is known as " parallel " classification ; that is to say, the librarian first arranges his books into two sizes or more. The following is a convenient arrangement :

Octavos and smaller works.

(Books not exceeding 10 inches).

Quartos.

(Books exceeding 10 inches but not exceeding 12 inches).

Folios.

(Books exceeding 12 inches).

He then makes three sequences of books on the shelves, one for each size. It is usual to indicate in the class-mark the sequence to which the book belongs, as, of course, the books range together, irrespective of size, in the catalogue. Octavos receive simply the class-mark; the class-marks of quartos are preceded by q, those of folio by f, i.e. books on general botany in the respective sizes would be marked 580, q580, f580. The method of some libraries is to run the sequences one above another in the same tiers; the four top shelves all along may be devoted to a running sequence of octavos, the next two to a sequence of quartos, and the bottom shelf to a sequence of folios. The sequences must run independently of one another or confusion may occur. In other libraries it is usual to shelve the quartos and folios in respective sequences at the end of each class. A third method, and the one that commends itself to us as least likely to confuse the reader, is to have complete size sequences not of classes but of the whole collection; thus, in a Dewey classified library the complete sequence of 0-9 of octavos, would be followed by q0-q9, and that by a

similar complete sequence fo-f9. This would prevent the mystification an unaccustomed reader would probably feel on finding the same numbers at two or more places in one set of shelves.

105. Having classified the books and brought them to the shelves, the arrangement of individual books comprised by the class numbers must be considered. If the Cutter Author Mark is adopted, the arrangement of each topic will be alphabetical by the names of authors (or by the first word not an article in the title of anonymous works), and this is probably the most convenient method for general libraries. In some libraries, however, the books are arranged chronologically by the date of publication, upon the thesis that every book is influenced by the books preceding it. This is an attractive idea, but it is not easily grasped by all readers. The classifier would do well to determine whether a wider adoption of the alphabetical order would not be more practically valuable than the order proposed by some classification systems. In Dewey, for instance, the classes in 800 are better, for general purposes, in alphabetical than chronological order, but the latter is undoubtedly best for college and similar libraries; Biography, again, is advantageously arranged in alphabetical order.

106. It is not enough to have accomplished the arrangement to this point. Guides are necessary, or desirable, as follows :

- (1) To the plan of the collection.
- (2) To the classes.
- (3) To the tiers.
- (4) To the shelves.
- (5) To individual topics.
- (6) To individual books.

and, in addition to these, various cross-references are necessary.

(1) The best guide to the general collection is a large plan of the library setting out the position of each class, and distinguishing it by a different colour, with arrows or other signs indicating the direction in which the classes run. A framed plan in a prominent position is a valuable key to a library. Of course this applies, from the public point of view, only to libraries in which the public has access to the shelves, but it may have value from a staff point of view in other libraries.

(2) The classes are guided by a large label placed either at the top of the case in which the class begins or in the top centre of the class. In some places a swinging or projecting sign at the end of each case denotes the class contained in the case ; so that, standing at a certain angle of vision, the visitor has a conspectus of all the classes before his eyes. This method is adopted in the Islington Libraries. Such class guides may simply bear the name of the main class in large capitals, but they are more useful if in addition they set out the principal divisions : e.g.



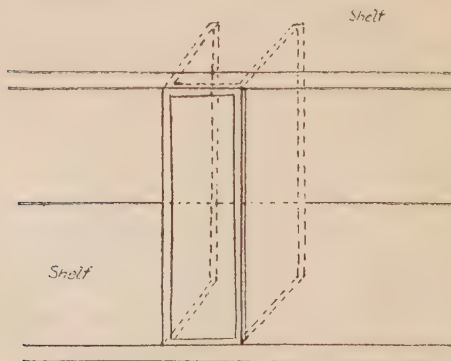
## 300 SOCIOLOGY.

300 General Works.	360 Associations and Institutions.
310 Statistics.	370 Education.
320 Political Science.	380 Commerce and Communication.
330 Political Economy.	390 Customs and Costumes (Including Woman and Gypsies).
340 Law.	
350 Administration.	

*Class guide from the Croydon Central Lending Library.*

Such guides should always be framed, as nothing is more offensive in a library than dirty and warped guides.

(3) A good deal of ingenuity has been expended in guiding the tiers. Perhaps the most ingenious method is that devised by Mr. Jast and described by Mr. James D. Stewart in *The Library World*, vol. vii, page 116. It consists of a block of wood with a framed diagram of the actual shelves fixed in front of it after the following manner :



*Mr. L. S. Jast's tier guide.*

The subjects contained on the various shelves are written on the appropriate spaces on the diagram.

This excellent guide is rather expensive and has the additional disadvantage of occupying the average space of three volumes in each tier ; it is, however, the most effective guide we know. Another very good method is that described by Mr. E. A. Savage in *The Library World*, vol. viii, pages 261-6, in which a schedule of the subjects covered by the tier is fastened in a large cover and inserted at a suitable place in the tier.

(4) Actual shelf guiding is only satisfactory in fixed location systems where the topic has an invariable place on the shelves. It is achieved by fastening a label as shown:

370 EDUCATION.
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on the front edge of the shelf. The difficulty of applying this to a relative location is that the moving up of books to accommodate additions involves the moving of the labels. Such labels, however, are stocked by the various firms dealing in library requisites. They are usually protected by a xylonite label holder which folds under the shelf.

(5) The guiding of individual topics has received much attention in open shelf libraries. A favourite method is the insertion of a narrow block resembling a book, with the name and number of the topic running up it vertically, amongst the books at the beginning of each topic, as shown :

*Newbury's topic guide.*

The size is about that of an ordinary octavo ; the back is flat and is about half an inch in breadth. These guides are made by a binding firm in cloth-covered millboard for a few pence each. The objection to the guide is that it is easily confused with a flat-backed book. A simple method (not recommended) is to cover a discarded book with white paper and use it as above. Another guide, tried with considerable success, is a thin sheet of millboard covered with white paper on which the topic is written at the top corner, the whole being varnished to preserve it. This sheet is  $7\frac{1}{2}$  inches by  $9\frac{1}{2}$  inches, and is inserted at the beginning of the topic, and, being larger than the surrounding books, its information shows above them. The result is that the reader standing at the end of the shelf sees all the topics by glancing along it. As the topic appears on each side of the card (in that top corner nearest the edge of the shelf on both sides, of course), he is able to see from either end all the topics the shelf holds.

(6) The method of guiding the individual book is

generally by showing the class mark and alphabetizing number in some way on the back of the cover. Wherever possible it is preferable to stamp these in gold on the binding, but as in most libraries this necessitates a visit of the book to the bindery, paper tags or a white paint are used. Several white paints are suitable ; we may instance that made by Cedric Chivers, Ltd., but they have all a tendency to rub off. Tags are used in various shapes and colours, but a round white tag will answer all purposes. Polychrome tags, however, have been extensively used ; one library indeed experimented with a tag made up of proportions of colours representing the main class, the division, and the section ; thus 300 might be blue, but 310 would be two-thirds blue and one-third yellow, while 315 would be three-sixths blue, two-sixths yellow, and one-sixth red—and the whole formed one tag ! We do not recommend this picturesque method. Colours are usually confined to classes ; thus all 000 may be red, all 100 blue, all 200 green, and so on. The distinction between classes is often indicated by shapes ; the tag for 000 being round, that for 100 triangular, for 200 square, and so on. But, as already remarked, a round white tag would meet all requirements. A minor discussion has taken place as to where upon the back of the book the number, or tag bearing the number, should be placed. Most librarians prefer a position one inch from the bottom of the book on the score of regularity and neatness. Others prefer it as near

as possible to the top on the score that the bottom of the book is the part most handled and numbers there are more likely to be rubbed off ; moreover, the number at the top strikes the eye more readily. The method of writing the number on the back of the book is usually in the form of a fraction, the class number being the numerator and the author number the denominator, as :

581		581
Hoo	and	H49

107. Whenever a book is moved out of its natural sequence in the classification, a reference should be made on the shelf to its absence and to the place where it is to be found. In Fiction when, as is now usual in libraries, a pseudonymous book is arranged under the real name of the author, a flat block about the height of an octavo and one inch thick, bearing on its edge the pseudonym and the reference to the real name, should be inserted ; as

SAND, George. See DUDEVANT.

*Edge of pseudonym reference.*

Where oversize books are placed at the end of the class on special quarto and folio shelves, a dummy

book—a wooden block resembling the above—should be placed in the correct place in the octavo sequence, and should bear on its edge the class-mark, author, and title of the book, and on the side the following legend :

“ This book is too large for the ordinary shelves, and will be found in its order on the special shelves for Quartos and Folios at the end of the class.”

Various applications of this reference dummy are explained by Mr. J. D. Stewart in *The Library World*, vol. ix, pages 208–11, 1906–7.

When these guides are provided the library may be assumed to be appropriately set out for public use.

108. We have now concluded our rapid survey of the main features of the art of classification. I am conscious that the ground has been covered scantily, but the difficulty of organising the large amount of hitherto undigested writing on the subject has been no small one. I would impress upon the reader the nobler idea of classification ; not as a means merely of arranging books, but a method, adopted by Bacon and followed by all great thinkers since, of so organising knowledge that its strength and its deficiencies may be clearly exhibited, in order that the intellectual worker may not work in already tilled fields, but may find still uncultivated fields for his labours. If by our intimate knowledge of classification and its application we may render the path of the intellectual worker clearer, we shall to

that extent have brought into our work the spirit not of the artisan but of the artist.

### 109. READINGS.

SAVAGE. "Classification Guides and Indexes." *Library World*, vol. viii, pages 261-66, 1905-6.

STEWART. "Guiding an Open-Access Lending Library." *Library World*, vol. vii, pages 113-8, 1904-5.

— "Oversize Books." *Library World*, vol. ix, pages 208-11, 1906-7.

BROWN. *Manual of Library Economy*, chapter xv, edition 2, 1907.

(The student would do well to run through chapter xiv by way of revision.)

HULME. "Classification in the Patent Office Library." *Library Assistant*, vol. iv, pages 27-33, 1903-5.

COURTS. "Classification and Shelf Guiding." In Brown, and Others. *Open Access Libraries*, chapter v.

BROWN. *Library Classification*, chapter v.

### 110. QUESTIONS.

(1) Draw a rough plan of an open access library classified by the Subject system, showing the distribution of classes. Explain it.

(2) Describe what class guides you would adopt in a classified library.

(3) Why are shelf guides difficult of management and what would you suggest in place of them?

(4) Describe all the methods known to you of guiding the individual book.

(5) Define, with examples, "broken order."

(6) What is meant by "parallel classification"? Describe its varieties.



## APPENDIX I

### THE LIBRARY ASSOCIATION EXAMINATION IN CLASSIFICATION

It will be useful if the reader who anticipates becoming a candidate for the certificate of the Library Association Examination in Classification, which is held each year in May, uses the questions subjoined as touchstones of his study. The questions are drawn from a collation of those asked at the successive examinations from 1906 to 1916. It is admitted that the theory of classification is a limited subject, and that the examiners experience some difficulty in ringing the changes year after year upon some dozen or less phases of it. Questions, therefore, which are the same but are disguised by phrasing have been omitted.

The examination has three parts :—

1. An Essay on some subject bearing upon classification, such as the construction of a scheme, a critical appraisal of an existing scheme or some part of it, or some other topic dealing with the theory or application of classification. The essay is written at home prior to the examination and is a sort of thesis of admission to it. The length of the essay is fixed at 3000 words, but the examiners usually exercise judgment in accepting a longer or shorter essay if the subject warrants it ; this, however, is the length specified. The subject is usually announced in January.

2. A Theoretical Paper (three hours). We have found

the following hints of service to students in answering this paper :—

(1) A choice is usually given of six questions out of twelve set. Do not answer more than the number required ; the words “ not more than six questions are to be attempted ” must be interpreted literally.

(2) Avoid the extremes of brevity and prolixity. Leave out extraneous matter (i.e. do not attempt to *teach* the examiners), and, above all, omit redundant words. Experience shows that much irritation is caused by wordiness ; be clear, concise, and to the point.

(3) The form of a proposition in Euclid is a good one to follow in examination answers. Begin with a definition, then add a demonstration (this involves examples ; illustrate everything that admits of illustration), and conclude with an example.

(4) Be careful in writing, composition, and punctuation.

A question on the terms used in various branches of classification is usually asked ; i.e. students are asked to define such words as Arminianism, Astrophysics, Quietism, Ratiocination, etc. These terms are chosen from all parts of the schemes, but the majority of difficult ones are in Philosophy, Religion, and Science. Students should look up these sections in the various schemes, make lists of terms he does not understand, and learn about six each day during his study. Care should be taken to use a good dictionary in order that the exact meaning of the terms may be understood—the meaning of many terms varies considerably. The correct meanings may be assured if the student bears in mind the meaning of the main classes in which the terms appear.

3. A Practical Paper (three hours) in which actual books, or prospectuses, or annotated entries of them, are

placed before the student, who is required to classify them by the Decimal and Subject schemes, and in some cases to give alternative classification numbers. A careful working through of *A Short Course in Practical Classification*, which may be considered to be a practical supplement to this book, should enable the student to meet this part of the examination.

SOME SUBJECTS SET FOR CLASSIFICATION ESSAYS  
SINCE 1906

1. A critical essay on Dewey's Classification, 100-999  
Philosophy:

2. The application of exact classification to shelf arrangement.

3. A comparison of the classifications of knowledge proposed by Aristotle, Bacon, Comte, and Spencer

4. To prepare a scheme of classification for a library of about 10,000 volumes in Philosophy and Religion, using Dewey's Decimal Classification, Brown's Subject, or Cutter's Expansive System, showing the main divisions ; then write a preface, explaining to the public the nature of the classification, and the method of using it.

5. A comparative critical account of the classes dealing with Bibliography and Library Science in the Library of Congress (as adapted in the *Union Class-List of the L.A. and L.A.A.*), Brown's Subject Classification and Dewey's Decimal Classification.

6. Prepare a detailed classification of the subjects Engraving and Photography, suitable for arranging a special collection of books and prints illustrating these subjects.

7. The Classification of Technology, with examples drawn from various schemes, and illustrated by titles from actual literature.

8. Compare the Brown Subject and the Dewey Decimal systems of classification.

9. The objects of a subject classification of books to be illustrated by one scheme.

10. Draw up a scheme for a classified catalogue arranged on the Subject (or other) system, for 10,000 books, explaining how far you would subdivide, what indexes you would provide, etc. Then, write a detailed preface, addressed to the public, explaining the classification scheme and how to use it.

A REPRESENTATIVE SELECTION OF THE QUESTIONS SET  
AT THE LIBRARY ASSOCIATION EXAMINATION IN  
CLASSIFICATION DURING THE PAST TEN YEARS

*On the Logical Rules, Order and Construction of  
Classifications*

1. Define the following terms: correlation, denotation, connotation, extension and intension.

2. What are the Predicables of Aristotle as now understood, and what bearing have they on systems of classification?

3. What is meant by extension and intension of terms, and what is their bearing upon classification?

4. Define classification, and explain in what respects it differs from cataloguing.

5. What is meant by the hierarchy of a classification? Explain its parts and the method by which it is constructed.

6. Explain the necessary characteristics of a satisfactory classification scheme.

7. How far is a classification of knowledge likely to differ from a classification of books? Give a typical example of each, bringing out the points of difference.

8. Name some of the differences between philosophical classification and bibliographical classification.
9. What are essential and accidental characteristics in classification? Illustrate.
10. Explain what is meant by "natural order" and by "artificial order": discuss and give examples of each as applied in classification.
11. A classification arranged by accidental characteristics of the things classified would not be so likely to be satisfactory as one arranged by natural characteristics. Demonstrate this with an accidental and a natural arrangement of a subject.
12. State what is meant by evolutionary progression in classification, and give an example from some system devised on this plan.
13. "A perfect arrangement of books is a perfect arrangement of the material of knowledge (subjects) with such practical adjustments (general and form classes, etc.) as the physical form of books demands." Explain this statement.
14. "It is illegitimate to employ two principles of classification, and, when one fails, to have recourse to the other. That is a procedure which must at once give rise to cross-divisions." Illustrate this passage.
15. Demonstrate that the convenience of the user is the essential of a bibliographical classification.
16. What is meant by "form" as compared with "subject" in classification?
17. Explain the following terms: Hierarchy, Schedule, Relative Index, Cross-Division.
18. Is a uniform system of classification for all libraries possible, and, if so, advisable?
19. Criticise the following statement: "So long as a

topic is properly indexed, it does not matter where it appears in the tables of a classification."

20. How far should scientific terminology be made use of in the classification of a general library? Discuss some alternative headings.

21. Discuss the advantages and disadvantages of merging history, geography, and topography in one class.

### *History of Classifications*

22. What great discovery in chemistry was due to classification?

[This refers to the discovery of certain chemical elements by the "Periodic Law," the development of Newland's "Law of Octaves," which is explained fully in Mendeljeff's *Principles of Chemistry*. For a brief account of this, see an article by L. S. Jast in *The Library World*, vol. xiii, pages 353-5.]

23. Name any two published schemes of classification other than those by Dewey, Cutter, and Brown, ancient or modern; and state succinctly date, author, and the characteristic features of each.

24. Name three important libraries classified on different systems, and describe briefly any special features of their classification.

25. Explain the importance of Lord Bacon's classification of knowledge, and its influence on subsequent systems, especially on the Decimal system.

26. Trace briefly the history of Bibliographical Classification from Brunet to Brown.

27. Describe the logical ideas or principles underlying the order of the main classes of the classification scheme of Francis Bacon, and of the Decimal, Expansive and Subject schemes.

28. What are the main features of the French scheme of book classification as settled by Brunet and others?



29. Describe any scheme of classification in use in the eighteenth century.

30. In applying the Expansive Classification to a library, where great growth is expected, it is important not to adopt one of the first few expansions of this classification. Explain why.

31. What do you know about the Library of Congress Classification?

32. If you had to reduce the ten classes of Dewey to five, which classes would you throw together, and why?

33. Indicate briefly the difference between the headings (130) Mind and Body and (150) Mental Faculties, in the Dewey Decimal Classification; also between (140) Philosophic Systems and (180, 190) Ancient and Modern Philosophers.

34. Wherein does the Classification Décimale of the Institut International de Bibliographie differ from the Dewey Classification? Explain briefly the special features of the former.

35. Write a short account of the "Subject Classification."

36. Compare the main outline of the Subject Classification with that of the Expansive Classification.

37. A certain classification includes under the heading Generalia the following divisions: Generalia, Education, Logic, Mathematics, Geometry, Graphic and Plastic Arts. To what other parts of the classification might some of these headings be removed, and state your reasons for suggesting such alterations.

38. Discuss briefly any scheme for the classification of Library Economy.

#### *Notation and Auxiliaries of Notation*

39. Define notation, with examples from three systems of classification, and comment upon the axiom:



"A pure notation is to be preferred to a mixed notation."

40. Give a brief account of the influence of notation upon the construction of classification schemes.

41. What are the characteristics of a perfect notation? How far are these met in the Decimal, Expansive and Subject classifications?

42. The flexibility of a notation is its essential feature. Explain.

43. Is it essential that a classification should provide class-marks for every conceivable topic, or indeed for any topic that has not been treated in print? Justify your answer.

44. Describe any system of classification which is known to you which is not furnished with a minute notation, and show by examples how you would supply the deficiency.

45. Give a brief history of decimal notation.

46. Explain the chief characteristics of the Dewey notation, and give examples of its divisions and subdivisions.

47. Describe the notations of Cutter's and Dewey's classifications and discuss their respective merits.

48. Describe the chief variations in notation between the original Decimal classification scheme and the extended scheme of the Institut International de Bibliographie.

49. What forms are designated by the following marks used in the Brussels Extension of the Dewey classification: (01 to 09), (2 to 9), " ", = 2 to 9, :, A-Z?

50. Describe the provision made in any modern scheme of classification for the subdivision of subjects by means of marks indicating forms and other qualifications.

51. Give an example in a modern systematic classification of the use of alphabetical order, and state in what circumstances it may be preferable to any other.

52. Describe the means provided in the Decimal, Expansive, and Subject classification schemes for obtaining alphabetical and chronological order within the limits of a topic.

53. Various geographical divisions of subjects can be made in the Decimal, Expansive and Subject schemes. Compare them.

54. Explain the Cutter Author Marks. How is their function performed by other devisers of author marks?

55. What are the Categorical Tables in the Subject Classification? How are their functions performed in other schemes, and to what extent?

*The Practical Application of Classification to  
Books, Shelves, and Catalogues.*

56. Draft (in outline) a scheme of classification for a collection of books upon (a) Prehistoric archæology; or (b) The printing arts; or (c) Library economy.

57. Draw up a table for the minute classification of a collection of books on London, based on the Dewey class mark 942.1, and showing how you would subdivide it.

58. Make a table for further arranging a miscellaneous collection of views of a seaport town.

59. Assume that you have been engaged to classify a library by Dewey. Write a brief essay showing how you would proceed.

60. What is classification by form? When would you classify by form?

61. Discuss the following rule of classification: "Classify by topic; then by form; except in pure literature, where form is paramount." Tabulate the

reasons for and against arranging pure literature, irrespective of form, chronologically by authors.

62. Discuss the rule "classify by topic" and illustrate (the example may be imaginary).

63. If you were asked to classify Haldane's *Pathway to Reality*, how would you proceed to ascertain the specific subject of the book?

64. In classifying a book, entitled *Portraits of French Kings*, which of the following characteristics should be selected to determine its place—Standpoint, Language, Literary Form, Specific Subject?

65. How would a collection of Folk Songs, with the music of the melodies only, be classified by the Decimal and Subject systems?

66. Under what Dewey numbers may books on the Child, and on Radium, be placed? Which of these numbers (if more than one) would you choose, and why?

67. In what division of the Dewey classification would you put a collection of regimental histories of the British Army, including its auxiliaries, and how would you arrange the collection?

68. State concisely the arguments for and against dispersing a set of author's works when classifying; take Carlyle's Works as an illustration.

69. What is the function of the Index in the process of classifying? In your answer describe the process.

70. "Index all classification decisions." What does this mean? Explain the various methods of doing it.

71. In how many sizes would you arrange a classified library so as to reduce to the minimum the shelf space required, and how would you differentiate the sizes?

72. Describe a scheme for the adequate "guiding" to the bookshelves of an open access lending department.

73. What guides are necessary, or desirable, to the classification of an open access reference library ?

74. Give models of class, tier and topic guides in a classified library.

75. Describe two methods of marking the backs of books to show class symbols and subdivisional numbers or letters.

76. Draw a diagram of a classified card catalogue, showing the method of guiding it.

77. What are the principal practical objects sought by the strict classification of books on the shelves ?

78. Which can be the most precise and full (a) classification of books on the shelves ; or (b) classification of entries in a catalogue ? State the reasons for your answer.

79. What are the relative functions of cataloguing and classification ?

80. In what way does a detailed scheme of classification aid the work of book selection and book annotation ?

## APPENDIX II

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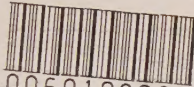


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